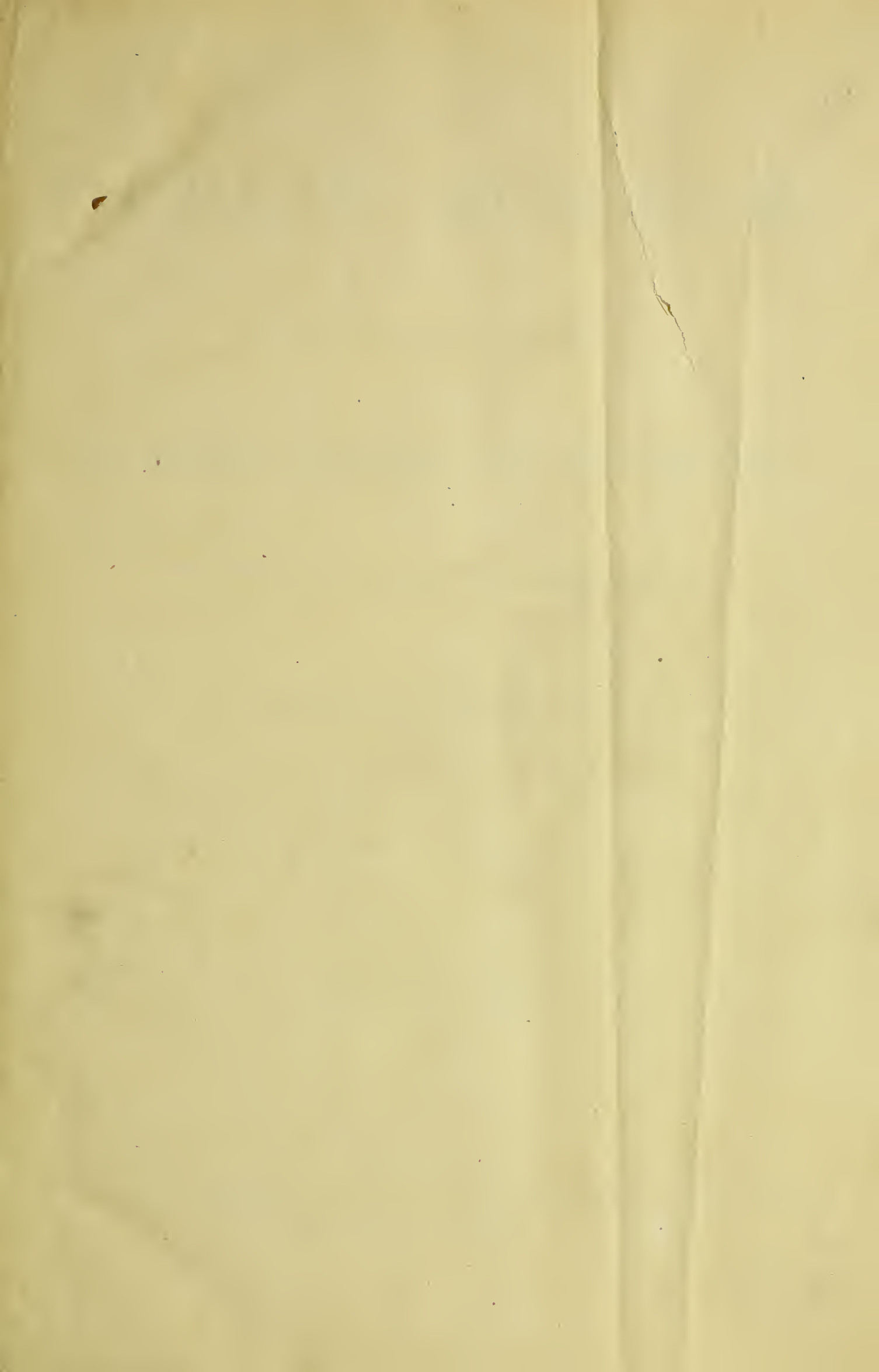


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THE
DUBLIN BUILDER;

ILLUSTRATED RECORD

OF

ART, SCIENCE, INDUSTRY, AND MANUFACTURE.

PUBLISHED ON THE 1st AND 15th OF EVERY MONTH.

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"The empire of man over material things, has for its only foundation the Sciences and the Arts."—LORD BACON.

VOL. VIII.—1866.

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The Dublin Builder.

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JANUARY 1, 1866.

1st & 15th
OF EACH MONTH.

VOL. VIII.

NOTICE.

REDUCTION IN THE PRICE OF THE DUBLIN BUILDER.

After some consideration, it has been resolved, at a sacrifice, to *REDUCE* the price of this Journal to **THREEPENCE EACH NUMBER**, trusting that ere long the benefit of the change will be reaped in an increased circulation and a greater field of usefulness. It is a matter of the deepest gratification to the promoters of the *DUBLIN BUILDER* to learn, as they do in many quarters, that the gradual improvement in the management, and more especially in the illustration department, has given much satisfaction, and they have now to state that the reduction in price will not be followed by any falling off in the value of the paper, but by redoubled exertion to render it still more worthy of the support of the public in the Eighth Year of its existence.

42, Mabbot-street, Jan. 1st, 1866.

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ILLUSTRATION:

DESIGN FOR THE ALBERT MEMORIAL CLOCK TOWER, BELFAST.

Contracts.

NOTICE TO BUILDERS.

THE

ECCLESIASTICAL COMMISSIONERS FOR IRELAND, on or before the 9th day of January, 1866, will receive Proposals for

BUILDING THE CHURCH OF

BALLYEGLISH (Parish of Ardrea) Co Tyrone.

According to the Plans and Specification, to be seen in the hands of the resident Minister of the Parish.

The lowest Proposal will not necessarily be accepted.

Each Proposal to be forwarded sealed, prepaid, and addressed thus:—

"Proposal for building the Church of Ballyeglish,
The Ecclesiastical Commissioners for Ireland, Dublin."

BELFAST WATER-WORKS. CONTRACT FOR NEW WORKS.

PERSONS desirous of Proposing for the several Works required to be done in forming and completing the Belfast Water-works may see the Plans and Specification relating thereto at the Office of Mr. BATEMAN, 16, Great George's-street, Westminster; or at the Office of Mr. LANTON, Upper Queen-street, Belfast, on or after the 8th of December instant.

The following Works are intended to be contracted for, viz.:—

CONTRACT NO. 1.

Consisting of a New Service Reservoir, near Belfast, and the Laying of a Service Pipe between the intended and present Town Basin

CONTRACT NO. 2.

A line of Close Conduit, between the New Service Reservoir and the proposed Reservoirs on the Woodburns, being about $9\frac{1}{2}$ statute miles long, including two Tunnels, together of about 900 yards long.

CONTRACT NO. 3.

Three Reservoirs on the South and North Woodburns, near Carrickfergus, together with a Flood Water-course, between two of the said Reservoirs.

All parties Tendering will be supplied with a printed Copy of the Quantities and Specifications of each Contract, together with lithographed Plans and Sections of the Conduit, Tunnels, and Reservoirs, on depositing a sum of Five Guineas with the Secretary to the Water Commissioners, which sum will be returned to all the unsuccessful competitors on their returning these documents to the Commissioners' Secretary.

Sealed Tenders to be forwarded, under cover, to the Secretary of the Water Commissioners, Belfast, on or before the 17th January next.

The lowest or any Tender not necessarily accepted.

By Order,

JAMES N. McNEILL,

Secretary to the Belfast Water Commissioners.

Belfast, 1st December, 1865.

TOWNSHIP OF KINGSTOWN. TO ARCHITECTS.

THE Commissioners of the Township of Kingstown are desirous of being furnished with **DESIGNS AND DESCRIPTIVE SPECIFICATIONS** of a **TOWN HALL**, with **ASSEMBLY-ROOMS** and **COURT-HOUSE** in connexion therewith. A Premium of £20 will be given for the best Design. The Expenditure not to exceed £6,500.

The Commissioners do not bind themselves to employ the Architect whose Design may obtain the Premium; but if they do, the Premium is to merge in the Commission.

A Plan of the Site and particulars of the accommodation required may be obtained on application to me, at my Office, at Harrymount. Designs to be sent in on or before 1st February, 1866.

JOHN HOGAN, Secretary.

BOARD OF PUBLIC WORKS. NOTICE TO BUILDERS

SEALED TENDERS, addressed to the Undersigned, will be received up to the hour of 12 o'clock, noon, on the 29th of JANUARY, 1866, for **BUILDING**

NEW CENTRAL POLICE COURTS, in the Vicinity of the **FOUR COURTS**, Dublin, according to Plans and Specification to be seen at this Office.

Each Proposal should be for a lump sum, and must be accompanied by a separate Detailed Estimate giving Quantities and Prices, and be endorsed "Tender for New Central Police Courts."

Both Tender and detailed Estimate should bear the name and address of the Proposer on the back.

Printed forms for Tenders can be had at this Office.

N.B.—Persons tendering should send in testimonials as to character and competency, unless previously known to the Board.

By Order of the Board,

EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 29th December, 1865.

* If this be not attended to, the Board cannot return detailed quantities to the unsuccessful parties.

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and can appreciate a joke from Aristophanes as much as a jest from Shakespeare. Their hearts and brains are too big to be satisfied with a county for a world. Farmhouse life at the farmhouse is keenly enjoyed by them, and palatial life at the castle or the chateau is just as keenly enjoyed; whilst quite alive to the beauty of the Sussex village church, they are equally alive to the grandeur of scale and greatness of thought visible in the remains of the chief commercial towns of the middle ages. The great Greek works—temple, theatre, and monument—find in these men their truest admirers. To them the shattered portico and broken wall is something more than mere proportion, and Stuart and Revete are not quite the end of the gospel according to Phidias. Good Renaissance work has, too, the best chance of being treated kindly by such as these, who seek in all phases of art those enduring principles, sometimes very patent and resulting in the noble architecture, at other times covered and concealed by a mass of peculiarities or the over-development of a feature which was unworthy of such emphasis. Mr. Woodward, had he lived, would probably have been one of the few independent architects, and the loss of the Crown Insurance Offices in Bridge-street is one for which no amount of Messrs. Deane and Son's polychrome and pretension can ever compensate.

"Parallel with the free architects are some few free works in the subsidiary arts. Messrs. Hart and Son, in iron and brass, perhaps take the widest range. In colour, Mr. Crace, though brought out by the late Mr. Pugin, has left the Puginesque, and freed himself from the trammels of all cliques, and the later works of Messrs. Green and King are equally removed from the influence of grooves. Messrs. Harland and Fisher ought, perhaps, to be mentioned for their work at Worcester College Chapel, which, taken in conjunction with their Gothic work, shows how good decorators may become superior to the trammels of any one historic style, and how, under proper direction, they may expound the good in all."

A PROFESSIONAL SCANDAL (?)

UNDER the title of "Another Scandal" the *Belfast Banner of Ulster* of the 15th ult. is responsible for a very inaccurate, a very uncalled-for and very mischievous article, as it appears to us, reflecting gravely on the character of an eminent architect and on several gentlemen holding high position among the citizens of Belfast. The "Scandal" as it is called, has been most industriously circulated by the transmission of copies of the paper with the paragraph in question marked, to a number of persons through the medium of the Post Office. A copy of the *Banner* marked as above stated was received at the office of the *DUBLIN BUILDER*, and was laid aside as being wholly unworthy of notice, until we perceived that these accusations, through the industry of those who had made it their business to circulate them, had re-appeared in the *Builder* and *Building News*, and were also the topic of very wide discussion and comment, when we unwillingly felt called on to take some notice of the subject.

The *Banner*, quoting from a correspondent, says:—

"An estimable fellow-townsmen, a member of the Established Church, recently deceased, left by his will the sum of £4,000 to build a church in the neighbourhood of Belfast. His pastor, to whom he was greatly attached, has a son who is an architect, to whom the deceased gentleman stood in the relation of godfather, and he left it as a dying injunction that this young man should be employed to build the church provided for in his will. He appointed several trustees—some laymen and some clergymen—to whom his dying request respecting the employment of his pastor's son is well-known, but it appears that, as one of the trustees is an architect, his co-trustees contemplate, or have really resolved, to disregard the express wish of the testator, and engage their co-trustee's services!"

"Such are the plain facts of a case that forms the topic of conversation and indignant commentary in many circles. I consider it peculiarly a case on which public opinion should be brought to bear. I sincerely hope the trustees have arrived at no such decision—that they contemplate nothing of the kind, though the reverse is confidently asserted."

"It is not alleged that the testator's godson is in any wise incompetent. On the contrary, although

I do not know him personally, I understand he is a young gentleman of accomplished ability, and in all respects qualified to carry out creditably his godfather's wishes. But even assuming that the trustees, in the exercise of their superior wisdom, considered he was not altogether competent, ought they not, in that case, to throw the matter open to competition—invite designs by public advertisement, and select the best? In no event ought a co-trustee to be privately appointed to profit by the carrying out of a trust, and that, too, in direct violation of the explicit wish of the testator who created the trust. This, I think, is consistent with well understood principles of law and equity, to say nothing of the obligations of morality and religion."

"Your publication of these hasty observations may lead the trustees to consider this matter in its proper light. I am averse to appealing to them individually through the columns of a newspaper, and, therefore, forbear—at all events, for the present. I do so in the hope that the matter, which if suffered to proceed, would cause much scandal, will now assume a just and honourable course, and thus render any further reference wholly unnecessary."

"We have received another communication on this subject, signed 'Anti-Ilumbug,' in which the statements correspond accurately with the above. But there is an important addition, namely, that the testator's family are particularly anxious his last wishes should be honourably carried out by the appointment of his godson as architect. The question is pithily put—'Are the trustees justified in setting aside the wishes of the testator and of his entire family, by appointing as the architect of the church their co-trustee?' We answer fairly, that we do not think they are."

As all the parties concerned are perfectly well known, it is quite unnecessary for us to conceal that the gentleman alleged to have taken advantage of his position as trustee to have himself appointed architect, is Mr. Lanyon the well known and respected President of the Institute of Architects of Ireland, and the gentleman referred to as the "testator's godson," Mr. Drew, a former pupil of his. On receiving a copy of the paper, a reply to these statements was at once forwarded to the *Banner* by the latter gentleman, who was naturally anxious to exonerate himself from any supposed participation in a transaction of so very questionable a character, and as, so far as we know, the journal which thus published this slander has failed to afford the satisfaction which was due by the publication of the reply, we willingly publish, at the desire of Mr. Drew, the statements which he forwarded to the *Banner*, and which were as follow:—First, that the deceased gentleman did not stand in the relation of godfather to him. Secondly, that although he, Mr. Drew, had little doubt if the question of the appointment of architect had occurred to his now deceased friend it would have been as stated, yet he had never heard that he had left any dying injunction on the subject, which affords some reasonable presumption that he did not; and thirdly, that, as to the wishes of the family of the testator, he did not feel himself at liberty to discuss private expressions on such a subject in the columns of a newspaper. Finally, that the article had given him much pain being in bad taste, and appearing to place him, against his will, in a position antagonistic to some of his warmest friends, and more especially to Mr. Lanyon, to whom he was bound by many ties of gratitude, and who was utterly incapable of being a party to any breach of trust, or any dishonourable transaction whatever. These are, we believe, the main facts of the statement which the *Banner* has failed to publish, and as this question cannot be wholly looked on as a personal matter, but as one having important bearings on professional etiquette, it appears to us that as much publicity as possible should be given to Mr. Drew's reply.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of the Royal Institute of British Architects, on Monday, the 4th of December,

A. J. B. BERESFORD HOPE, Esq., M.P., President,
in the Chair,

A paper was read by Mr. James K. Colling, fellow, on "Art Foliage."

Mr. Colling commenced by stating that in England perhaps no architectural foliage has ever excelled that of the Early English period for purity, boldness of treatment, and effects of light and shade. It is, however, too conventional for the purposes of modern art; it is engrafted with and forms a portion of the architecture of the 13th century, and can, therefore, be used in this the 19th century, merely as a revival, without becoming a part of the architecture of the present age. There is a great need, Mr. Colling remarked, to guard against this conventionality, which at length descends to mere mannerism, to the exclusion of natural forms and features, as was so evident in the ornament of the Perpendicular period. The treatment of foliage for the purpose of architectural ornament, Mr. Colling said, must, more or less, be always geometrical and symmetrical, in accordance with its situation and purpose—1st, as to arrangements of branches, constituting the leading ornamental lines; 2nd, as to forms of leaves and flowers; 3rd, as to conditions of light and shade; 4th, the position it is intended to occupy, whether near the eye or at a distance from it; and lastly, the material of which the ornament is to be executed. Animal form interwoven with forms taken from the vegetable kingdom, Mr. Colling observed, has almost always entered to a great extent into every kind of decoration, evidenced, among other instances, in the conventional rendering of the lion in the various types assumed in the Assyrian, Greek, Roman, and Romanesque and Mediæval periods down to the 16th century, each age possessing the peculiar characteristics of its own system of art; one mode of rendering animal and vegetable form consisted in representing them merely by the aid of two colours, or painting and inlay, or two surfaces in sculpture, leaving the object to be shewn in its simple Christianity by the constant development of various forms of the cross. The foliage of the Anglo-Norman period, Mr. Colling said, is remarkable for its great vigor and expression, and contains the most clever development of elegant lines, combined with great simplicity of light and shade, and in the doorways in particular the sculpture evinces the highest and most artistic treatment. Mr. Colling proceeded to observe that very little indulation of surface is necessary for the sculpture representation of leaves, where the ground should be deeply recessed for shadow, thereby giving greater brilliancy to their radiating or other forms, which would be otherwise impaired by a superabundance of light and shade. He then spoke at some length on the necessity of constantly studying nature, rather than the merely inanimate form; nature, he said, should be watched and examined at different seasons of the year, and viewed from different positions, and every part of a plant that strikes the eye by its elegance of form should be carefully examined, and drawn, to form a store for future use in designing ornamental art. Mr. Colling referred to numerous examples of plants, leaves, and flowers deserving of careful observation, and pointed out the chief points of difference between Greek and Roman foliage and its various phases through the Byzantine period. In conclusion, Mr. Colling again remarked that all carved ornamentation placed on a surface, whether leafage, flowers, or fruit, should be carved out of or within the surface itself that the ground from which the ornament springs should be recessed or sunk, the subject being, as it were, contained in a panel, thereby giving truthfulness to the work and avoiding that stuck-on appearance so commonly practised in modern architecture, where the ornamentation being placed on outside, hangs frequently in festoons over the surface to be decorated, instead of being found within it, and becoming a portion of the work itself. Architecture hereby becomes a mere peg upon which to hang the fancies of the decorative artist, whose object is to cover up the architecture wherever he can extend his ornamentation, a system which must sink architecture to the lowest depths of degradation, for ornamentation thus appears to be endeavouring to usurp its place, a vicious principle, which cannot be too strongly condemned.

A discussion followed the reading of this paper, in which Mr. M. Digby Wyatt, M. White, Mr. Edwin Nash, Mr. Burges, M. Morris, Professor Kerr, and the President took parts, and after a cordial vote of thanks to Mr. Colling, and a few words in reply from him, the meeting adjourned till Monday, the 18th inst., when a paper will be read by T. Gambier Parry, Esq., connected with architecture.

THE UNHEALTHINESS OF IRISH TOWNS, AND THE WANT OF SANITARY LEGIS- LATION.*

ABOUT two years ago I had the honour of reading a short paper on the "Sanitary State of Dublin," in which I was compelled to assert that it was most unsatisfactory because of the insufficient legal powers which then belonged to the Corporation, and because of the imperfect machinery which had been organized to carry out the preventive powers which they did possess. In July, 1864, the "Dublin Improvement Acts Amendment Act" became law, and so ample were its provisions that it has left scarcely anything to be desired in the way of sanitary legislation, and it will be the fault of the Corporation and its officers if the most substantial benefits do not soon follow. The artisan and poorer classes of this city, who number about 100,000, dwell in some 8,000 houses, each room of which is usually let as a separate tenement, and the state of these dwellings has been deplorable in the extreme. The Corporation gained by the recent Act the power to compel the owners of these houses to put in thorough repair and keep so their roofs, walls, and chimneys, to have their windows kept clean, and glazed, and movable at the top or bottom, and to keep a properly-trapped house-drain and other sanitary requisites in good order. The Corporation is also to determine the fit number of occupants for each of these rooms, many of which are dangerously overcrowded; for instance, in Cuffe-street there is a room in which six adults have but 216 cubic feet of space each, and two children half that amount. The standard which has been proposed is 400 cubic feet for each person over eight years and 200 for each child below that age, and a card stating the cubic measurement and the fit number of occupants will be posted in each room. The poverty of the occupants and the want of good house accommodation has precluded the adoption of a higher standard, the regulations under which I am sure would be disobeyed, and our efforts would consequently fall into contempt. The inspection of these lodging-houses is entrusted to eight sergeants and a superintendent of the metropolitan police, whose books constitute a most accurate record of the sanitary state of every one of their rooms. I believe, therefore, that the sanitary state of Dublin will contrast favourably with that of any other city in the United Kingdom, when pure water shall be supplied to every house, when sewers are extended, and a few other improvements effected without increased taxation—a subject on which our citizens are just now rather sensitive. In Waterford, Dr. Mackesy, and in Cork, Mr. W.D.E. Parker, have procured an expression of public opinion that a similar act is desirable in those cities, and I being desirous that other towns should share the blessings of so good a measure, devoted a few leisure days in the autumn to visiting them. The unhealthiness of some of these provincial towns induced me to consult with your society as to the best remedies for it, and I have, therefore, written this hasty paper, which I feel sets forth very imperfectly the immense importance of the subject. I have omitted those of my notes which refer to minute hygienic details.

The statistics with which I propose to illustrate the state of disease in each town are as follows:—

1st. The death-rate, with which I have been favoured by the Registrar-General. In his inaugural address last month, the Right Hon. Mr. Justice O'Hagan expressed his opinion that notwithstanding the Registration Act, a large proportion of the deaths were unrecorded, and there is little doubt that the numbers of deaths in the towns I shall allude to are greater than these figures indicate.

2nd. The number of cases of fever which had been treated in the hospitals of the union and those which were seen by the medical officer of the dispensary for the last seven years. I obtained these data from the Poor-law Commission returns; but as I have struck a yearly average on the assumption that one case of fever is treated at the patient's home for every two admitted into hospital (a ratio which, in some instances, I have found exact), the results are but approximations, and that admirably-worked department cannot be held responsible for them.

3rd. The proportion of inhabitants attacked with cholera in the epidemics of 1832, 1849, and 1854. These proportions I have derived from the manuscript record of the late Prof. Barker, who for so long a period, in connexion with the Board of Health, cared for the public health of this country, from the report of the Commissioners of Health (1852), and from the Poor-law Reports of 1854-5. The very similar progress of former epidemics to that which lately passed over Europe gives to us reasonable grounds for anxiety.

Knowing that any general statement as to the

* By E. D. Mapother, Esq., M.D., Medical Officer of Health to the City of Dublin. Read before the Statistical and Social Inquiry Society.

unhealthiness of towns would be likely to meet merely with an apathetic assent, and as registration has now for the first time permitted the effects of faulty sanitary arrangements to be demonstrated, I have directed my remarks specially to each town, and I must beg forgiveness of the inhabitants if the results of my investigations should place their localities in an unfavorable light.

In Sligo (population 10,605), 1 in 43 yearly suffered from fever on an average of 7 years. In the cholera epidemic of 1832, this town suffered more than any other in Europe, 1,232 persons, or 1 in 12 of the inhabitants were attacked, and the mortality for some days attained 100 daily. Again, in 1849, 1 in 27 suffered from that disease. The death-rate for the past year in the entire union was 1 in 54, and that of the dispensary district 1 in 47, and the sanitary state of the town affords an explanation of these sad facts. The sewers are few, and more for the conveyance of surface-water than sewage; they are furnished with mere gratings, which evolve the effluvia most freely. Scarcely such a thing as a water-closet is to be found. The Corporation has not adopted the clause of the Towns' Improvement Act which provides for water supply, and this greatest of sanitary requirements is derived from wells and pumps, which in badly sewered and crowded towns are so subject to defilement. The water of the river is also used, and the impurities from the churchyard, which is but a few feet distant, percolate into it. It is disgraceful that some steps are not taken to close this graveyard, as well as those of very many other Irish towns. That of Sligo is in the very midst of the town, its earth is dark, fetid, and overcharged with human remains, so that it cannot forward the decomposition of the bodies. So numerous have been the interments that the surface of the ground outside has been raised three or four feet above the level of the floor, obscuring the abbey walls, which are so interesting to the archaeologist. Many of the streets are narrow, ill-paved, and dirty.

The Towns' Improvement Act of 1854 has not been adopted, and, as is quite usual in Irish towns, the Corporation contains no medical member, neither do they employ a surveyor or inspector of nuisances, or any analogous officer.

The yearly funds from rates and other property in 1863 only amounted to £288—a sum preposterously inadequate to either the requirements or wealth of the town. Neither nuisances, the emission of smoke, want of sewers, offences under the Lodging-house Acts, the sale of unsound food, or other sanitary offences seem to challenge inquiry or prosecution, as Dr. Hancock records but three such cases in his "Judicial Statistics" during the past year.

Emis (population 7,041.) No less than 1 in 24 of the population of the dispensary district yearly suffer from fever, or about 1 in 62 of the people in the entire union. It has never escaped an epidemic of cholera, 1 in 10 having been attacked in that of 1832, which created such a panic that 127 of the houses of business were closed, and 1 in 54 was seized in that of 1849. The death-rate of the entire union was 1 in 65, and of the dispensary district 1 in 42. Scarletina broke out in a small filthy part of the town during the past autumn, and in a couple of months produced 50 deaths. There is no method of removing sewage, save by surface channels, and the water supply is by pumps and superficial wells. The graveyard is in the town and surrounded by houses.

No medical man has a seat on the Town Commission, and no local surveyor seems to be employed. Dr. Crampton, the Government Inspector in 1818, reported:—"In the town of Emis many of the poorer classes lived in close dirty cellars, the streets narrow, and the population condensed within a small space. The town also had been remarkably dirty, and full of nuisances antecedent to the visitation of the epidemic"—a description which, I fear, is equally applicable at present.

Athlone (population 5,802) has suffered from every visitation of cholera. 1-18th of the people were attacked in 1849, and in January 20, 1855, a severe outbreak occurred. Some days after an inspector of nuisances was appointed, who was to notice all owners of premises where nuisances existed, and if found necessary, to summon them. The death-rate of the union has been 1 in 62. Fever epidemics have been always severely felt, over one-fourth of the people having suffered in that of 1818. The sewerage is very bad, the lanes filthy, the lodging-houses and cabins over-crowded, and the former are not inspected. The water supply is from pumps and superficial wells. The graveyard is in the centre of the town, very closely surrounded by dwellings.

From the position of the town, divided by the Shannon, towards which both halves slope, an efficient system of sewerage might be readily constructed. The Commissioners have no local surveyor.

Tipperary (population 5,864). About 1 in every 62 persons of the entire union suffer annually from fever. Cholera did not spare the town either in 1832 or 1849, but attacked 1.27 of the people in the former year and 1.33 in the latter. The death-rate of this town and the surrounding district reaches the high proportion of 1 in 39. The water supply is by wells and pumps. The graveyard is in the town surrounded by houses.

There are Town Commissioners, but no medical man is among them, nor do they employ a local surveyor or inspector of nuisances.

Enniskillen (population 5,774). The death-rate of the union is 1 in 72. One in 40 of the population was attacked by cholera in 1832; it wholly escaped in 1849, but suffered severely in 1854-55. There was then no permanent inspector, and Dr. Hill, the Medical Poor-law Inspector, reported that no steps were being taken for cleansing the dwellings of the poor. Since then two persons are employed to prevent nuisances, and much of the improved health of the town may be attributed to this fact.*

The water supply is by superficial wells and pumps, which give a very impure water, and partly from the river, into which the sewage of the town flows. The town is under the old imperfect Towns' Act, 9 Geo. IV., c. 82; the sewers are few and inefficient, and they discharge their effluvia by large open gratings here and there through the streets. I am happy to learn, however, that a guardian is agitating the construction of sewers under the Sewage Utilization Act, and as the town is steep and surrounded at all sides by the branches of the Erne, it could be readily and very perfectly drained. The town has corporate property, amounting, I am informed, to £1,500 a-year, exclusive of the rates. The churchyard lies in the very midst of the town, and from its crowded state must exercise a very pernicious influence.

Carrick-on-Suir (population 5,059). The death-rate in the dispensary district attains the appalling figure of 1 in 34, and that of the entire union is 1 in 48. Fever attacks about 1 in every 31 annually, but for the last year it has raged so alarmingly that about one-eleventh of the people have been stricken down. In the fever epidemic of 1818, one-sixth of the people were attacked. The cholera in 1832 and 1849 respectively, attacked 1.40 and 1.23 of the townspeople. The graveyard is in the exact centre of the town, which is also the densest part.

The Town Commission includes no medical member, employs no surveyor, and appears to be a very apathetic body, for in three consecutive reports, the Registrar has publicly complained that the sewers are bad and scanty, and the houses overcrowded, and the town altogether is the most dilapidated in Ireland.

The registrar of a rural district near Carrick-on-Suir, Rathgormuck, justly complains of this bad neighbour from which fever has been imported into his district.

Kinsale (population 4,850). The death-rate of the dispensary district is 1 in 51, and that of the entire union is 1 in 64. In the first cholera epidemic 1.13 of the inhabitants were attacked, and one-sixth in that of 1849, Kinsale having suffered more than any other Irish town, except Gort and Ballinasloe, where nearly half the townspeople were stricken by the pestilence. The town a few years ago was unsewered, and the imperfect drains which now exist open into a large cesspool, which is, however, twice daily flushed by the sea. The noxious mud is left behind.

Many of the houses are built on very sloping cut-away rock, which allows no perfect airing, or no draining whatever, as there are not sewers leading from them.

The water is derived either from filthy surface wells or from wells near the overfilled cemeteries of the town. A new supply is about to be obtained, but from sources not at all above suspicion. In the epidemics of cholera, the low lying parts of the towns, to which an ill-arranged system of sewerage would bring the sewage, suffered far more than the higher portions.

No medical man is among the Town Commissioners, and no surveyor or inspector of nuisances is employed.

Longford (population 4,819). The death-rate of the union is 1 in 71. Cholera visited this town severely in both 1832 and 1849, 1.17 of the inhabitants having been attacked in the latter epidemic, while the neighbouring town of Granard wholly escaped, probably because it possessed a good supply of water from deep wells, whereas those in Longford were more superficial, and as the river Camlin runs through the town the poor people may have made use of its water contaminated with sewage.

The Commissioners have an inspector of nuisances,

* As but one prosecution took place in the county during 1864 under any sanitary Act, we must suppose the inhabitants very obedient, or else the authorities very neglectful.

but filthy lanes of wretched cabins and unregulated lodging-houses abound. The registrar states that during the present year there have been severe epidemics of fever, scarlatina and small-pox.

Tullamore (population 4,797). The death-rate has been 1 in 42 in the dispensary district, and 1 in 63 in the whole union. Both the cholera epidemics visited Tullamore, attacking 1 in 25 of the inhabitants in the first, and 1 in 26 in the second.

The rate of mortality has on both occasions been about the greatest in Ireland—namely, 76 and 65 per cent.

The Town Commission has no medical member, and has no nuisance officer. During a recent outbreak they employed a person at a salary of 5s. a-week, a sum which could scarcely obtain the services of an intelligent or active man to inspect or cleanse the town.

Not a single prosecution under any Sanitary Act has taken place in this town, or indeed in the entire county during 1864.

Kilrush (population 4,593). The death-rate of the district is 1 in 50, and of the union, which is chiefly rural, 1 in 75. Fever attacks every year about 1 in 23. Cholera has on both the visitations spread with great rapidity and violence, attacking respectively 1 in 24 and 1 in 17 of the townspeople. The graveyard is immediately at the edge of the town.

The town is imperfectly sewered, and unsupplied by pure water, yet no steps have been taken to obtain the Towns' Improvement Act, although the inhabitants are more than three times as many as the required number.

But one prosecution under any Sanitary Act occurred during 1864 in the county of Clare.

Navan (population 3,865). The district has had the very high death-rate of 1 in 48, and that of the entire union is thereby raised to 1 in 54. In the first cholera epidemic 1 in 28 of the people suffered; but the town was very slightly attacked in 1849, although the neighbouring town, Kells, was so severely visited. Fever, which in the epidemic of 1818 attacked one-fourth of the people, is always very prevalent in Navan, and this can be no matter of surprise when one walks through the filthy lanes of hovels, many of which are lodging-houses, in which the town abounds. The sewers are too few, and being untrapped, they do more harm than good.

The Boyne and Blackwater course through the town, and would afford, as the town is hilly, natural aid to a system of drainage.

Macroom (population 3,289). The dispensary district, with the exception of this town, is very much a rural one, yet the death-rate has been 1 in 55. Cholera attacked the town severely in 1832, 1849, and 1854, and fever is stationary there, yet there is no town commission. Dr. Geary, the Medical Poor-law Inspector, reported on the state of the town in 1854, and after describing an unusually filthy state, says, "The want of water is much felt in the eastern side of the town, there being no pump, and the river being some distance away. Here, too, the absence of sewerage, or the defective character of that which has been attempted, tends to perpetuate the uncleanly habits which are found to exist. I am informed by the occupants of large and good-looking houses of business in the centre of the town, that they send all their house and night-soil to be deposited in the river at a late hour at night, and people drink the water of this stream, both here and along its course to the Lee. Even the people along the banks of the latter great river may suffer from the sewage of Macroom if forced by their own imperfect supply to use its water.

Kells (population 3,224). The death-rate of the district is 1 in 50. Fever is very prevalent, and is nearly three times as frequent in the Kells dispensary district as in the whole union, the other districts being more rural. In 1818 one-third of the people were seized with fever. Cholera attacked 1 in 17 of the inhabitants in 1832, and 1 in 12 within seven weeks of 1849. Anyone who examines the sanitary state of the town might predict that the death-rate and epidemic-rate would be thus lamentably high. The sewers are too large, made of rubble masonry, flagged on the bottom, and are very imperfect, most of them having gratings which emit the effluvia of the decomposing sewage, and the stench traps which had been laid at the time of my visit were out of order. The lanes and the yards behind the houses were covered with the most noxious kind of filth, for there was no accommodation behind most of the houses. The main sewers lead to the eastern end of the town, and open into grips within twenty or thirty yards of the town, in which, as there was no current, the sewage was drying and putrefying. The river Blackwater, into which the sewage should be discharged, is not half a mile from the edge of the town. The water supply is by pumps, sunk, I was told, very superficially, two of them being in most dangerous prox-

imity to the crowded church-yard, one within ten and the other within fifty yards of graves. Other pumps were in corners, which were also used as the filth depôts of the town. The water was very bad in taste and much complained of. The cabins were as ill-constructed, unaired, and dirty as any I have seen in the remotest parts of this country. With regard to other towns, I have had to acknowledge that the corporate funds are insufficient for the adoption of the improvement I advocate; but Kells has an income of £750 a-year, exclusive of the borough rate, which the commissioners have never levied. With such abundant funds they should be surely called on to provide for the health and comfort of their constituents, when death, disease, and dirt so lamentably afflict their town.

No medical man is connected with the Town Commission, nor do they employ a surveyor.

But one prosecution under any Sanitary Act took place in the entire county Meath during 1864.

Ballyshannon (population 3,197). This town has always been subject to epidemics. In the year 1818 "almost everyone was attacked" with fever, and in the cholera of 1832, 1 in 9 of the inhabitants suffered. While the steepness of the town and its proximity to the river would render it most easily drained, the sewage is imperfect, and from the want of water-traps the stench in lanes is most pernicious. The cabins are most wretched and overcrowded, especially in the part named the Port.

The Town Commissioners do not employ an inspector of nuisances or local surveyor.

Boyle (population 3,098). This town was not spared in either of the cholera epidemics, and in the year 1818 one-fourth of its inhabitants were prostrated with fever. Typhus and typhoid fever are recorded as being frequent there this year. It is almost unsewered; surface channels filled with filth being in most of the streets, and where there are sewers, the old-fashioned gratings which open from them emit all the effluvia. As the town is very steep, and the river runs through its centre, sewers might be made, most efficient; but the Towns' Act has not been adopted.

In Loughrea (population 3,022) the water supply appears to be abominable, being derived from the lake into which the sewers, particularly those from the military and police barracks, empty. Seven cases of severe British cholera have occurred recently.

The Commissioners have no medical man amongst them, and employ no local surveyor.

Castlebar (population 3,072). Few towns have suffered more from cholera than Castlebar, 1 in 18 and 1 in 27 having suffered in the two first epidemics. That pestilence broke out also in 1854. On the 29th and 30th of October five persons, four of whom lived in one house, had died, and three other cases were reported by the medical officer, who got together his dispensary committee. This sapient body resolved: "That at present there does not appear to be any decided case of Asiatic cholera," and consequently they do not appear to have taken any precautionary steps for the epidemic spread.

Since then, Town Commissioners have been appointed, but the only clause which they seem to think necessary is that which empowers them to light the town, and they do not employ officers for any sanitary purpose.

Roscommon (population 2,619). The death-rate of the dispensary district is 1 in 38, being the highest I have noted save that of Kilmallock and Carrick-on-Suir. So great is the town mortality that it raises that of the whole union, the other districts of which are very rural, to 1 in 58. Cholera produced great mortality in both epidemics, and attacked respectively 1 in 30 and 1 in 26 of the townspeople.

The Towns Act has been adopted, but no medical man is connected with it. The town is in many places so ruinous as to merit the epithets in Thom's "Directory" of "straggling, ill-built, and ill-arranged—with miserable outlets." The sewerage is very imperfect, and one main sewer opens into a grip along the poorhouse road, and within ten yards of it is the large pond from which many of the people derive their water supply. The water of the town is scanty in summer, always impure, and has to my own knowledge produced attacks of diarrhoea.

Newtownards (population 2,542). Cholera has never spared this town, and fever is very prevalent. The Registrar in September, 1864, describes it as "dirty, unlighted, and unwatched at night."

In the neighbouring town of Bangor (population 2,531) the order for electing a commission has been passed, but no steps have been taken, although no town in Ireland requires its admirable provisions more. 1 in 15 was attacked by cholera in 1832, and in 1849 the town was also severely visited. In November, 1857, fever burst out with such violence that 25 cases occurred in a fortnight, 5 persons having been attacked in one house. The Inspector, Dr. Knox, on that occasion described

the houses as ill-ventilated and overcrowded, the drainage unsatisfactory; and these facts had been previously brought under notice without any material results.

Newtownards and Bangor are so close together that a commission governing both with proper officers could be readily elected, and even Donaghadee might be included. Some steps should be taken to stay the appalling mortality of the union which is now 1 in 47, and to check the spread of fever which averages 1 in every 60 of the population yearly. These figures are explained by the fact that the union contains many towns in which sanitary matters are uncared for.

Portaferry (population 1,930), another town in the same county, seems no better off. One-tenth of the inhabitants suffered from cholera in 1832, and a local outbreak of that disease occurred in 1857 and invaded thirteen houses. "The only peculiarity of circumstances affecting them which could be ascertained with certainty consisted in the scarcity of water used for drinking and cooking purposes arising from the long summer droughts which had also tended to render it thick and muddy."—Dr. Knox, Poor-law Inspector.

Chapelizod (population 1,958) among other towns in the neighbourhood of the metropolis, loudly demands some local authority to prevent the ravages of fever and cholera when they become epidemic. I cannot more forcibly prove this statement than by quoting the following facts from Dr. Hill's report:

The town which had experienced severe attacks of cholera in 1832 and 1849 was visited again in October, 1854; and in February, 1855, another outbreak began, and within the week 17 cases occurred. One case was that of "a factory girl, aged 18, who with seven others of about the same age, and a man, the father of two of the girls, lived and slept in a room not quite 12 feet square." The committee of management had held no meeting for 105 days before this last outbreak, although warned by the former one which had so recently occurred; and it was not until two days after the last case the police sergeant informed the medical officer that steps would be taken for cleansing and whitewashing the houses where the disease had appeared, and for carrying into effect the provisions of the sanitary acts. I might easily multiply facts, but these I think are sufficient to show that in a town of nearly 2,000 inhabitants, some legal power to thin overcrowded rooms such as that in which this poor girl existed, is called for, and that so tardy and inefficient a local authority should be superseded.

Carrick-on-Shannon (population 1,513), the assize town of the county Leitrim, has not adopted the Towns' Act. It is quite unsewered, wretched, and uncared for in the extreme, and has a most suspicious water supply. In 1818 the epidemic fever prostrated over one-third of the inhabitants, in 1832 cholera attacked 1 in 14, and so great was the panic that no one remained in the town except the doctor's and Ennate's family and the military in the barracks.

The Nuisances Acts nor the Lodging-houses Acts do not seem to be practically in operation in this county, for no prosecution under them is recorded in the "Judicial Statistics" for 1864.

Maynooth (population 1,497) is at three below the population which empowers the adoption of the Towns' Act, 231 cases of cholera occurred there in 1832, and 141 in 1849.

Rush (population 1,453), wants but forty-seven of the required number, and if amalgamated with Lusk, which is but two and a-half miles distant, the combined population would be 2,092. The fact that 237 cases of cholera occurred in Rush in 1832, that fever is never absent, that sewers are most partial and untrapped, that many of the houses are remarkably ill-constructed, and that the water supply is principally by surface wells, into which a copious rainfall washes all kinds of filth, seem to indicate that some sanitary authority is needed. The death-rate of the dispensary district is 1 in 56.

Kilmallock (population 1,393). The death-rate in the dispensary district for the year ending September, 1865, attained the unequalled height of 1 in 28, and that of the whole union 1 in 60. Much of this mortality is due to fever, for on an average of seven years about 1 person in every 52 persons in the union is attacked with that disease each year; and in each of its six districts the rate has been as follows:—Kilmallock, 1 in 34; Bruff, 1 in 53; Hospital, 1 in 101; Kilsbane, 1 in 45; Charleville, 1 in 62; Bruree, 1 in 52. Cholera in 1832 attacked 1 in 12 of the inhabitants of this small town. It is below the number for the Towns' Act, but by amalgamation with a neighbouring town, as Charleville or Bruff, Commissioners might act for the town.

Milltown Malbay, high above the sea, permeated by the fresh Atlantic breezes, and which, from its local advantages, ought to be the healthiest town in Ireland, has been always severely visited by cholera, and during April, May, and June this year a disease more preventible—namely, typhoid fever—has

attacked between 55 and 60 of the villagers, who number but 1,330, the cause being in every case traced to pollution of the water and of the air by want of sewerage in the neglected parts of the town where water was also deficient. The medical officer duly reported these circumstances to the poor-law guardians in April; during May and June the pestilence raged, and on the 15th of August, six weeks after it had ceased, this body first took action to improve the sanitary state of the town. Between April and September of this year about 150 cases of fever have occurred in this district.

Newmarket (population 1,137). The sanitary state of this town is graphically described in Dr. Geary's report in 1854. Each house has a small yard, in which the house soil and manure floats in offensive water up to the kitchen door, pigs are frequently kept in the yards, or even in the houses themselves. Overcrowding seems to prevail, for in one house, not inappropriately named the "hulk," forty-six persons existed. Dr. Geary notices that very many convicts have been reared in this abode, and the fact is not devoid of connexion with its sanitary state. Opposite the police barracks was found a dangerous collection of nuisances drained by a sewer which passed in its course to the mill-pond under the floor of a house to which there was attached a filthy yard for pigs, who were, however, also free of the house. A wretched man in cholera was found lying on the floor of this house, and when the sewer under the floor was opened, it was found choked with most offensive matter. Opposite this house it was customary to empty the night soil of several houses as there had been a drain, but as at this time it was choked, the filth floated down to the police barracks.

Before the time of Dr. Geary's visit, the medical officer reported a case of cholera which was fatal, on the 6th October, to the dispensary committee and guardians, verifying his statement by the evidence of two other physicians, yet the latter body postponed the consideration of the sanitary state of the town for a week.

Sixty-six cases of cholera occurred in 1832 in this village, and it was severely attacked in 1849.

Glin (population 993). In 1854 cholera broke out, and Dr. Geary reported that the houses were most filthy and overcrowded. "In the upper and lower main streets at the western side, there are offensive open drains running down immediately behind the houses and communicating from yard to yard, the contents being mixed at some points with the blood of animals slaughtered by butchers in their own houses. Few towns are better situated for drainage, and where an effective system of drainage could be secured at a smaller expense. At the village of Tarbert (3 miles distant, and with 857 inhabitants) the very same state of neglected sanitary arrangements was observed. Manure heaps, cess-pools, defective and obstructed drains and sewers running behind the houses; animals slaughtered in houses, and the blood on the floors in the very apartments used for cooking, eating, and sleeping in; pigs in the houses and rear yards; overcrowded apartments and filthy collections of fetid water from underneath the paving in immediate connexion with the police barracks." Shortly after the date of this report the epidemic spread, and carried off, among others, the chairman of the board of guardians.

Oldcastle (population 979). The death-rate in this dispensary district has been 1 in 46, and in the entire union, which is remarkably rural, 1 in 73. About 1 in 78 of the entire union population yearly suffer from fever, which has been typhoid, or that variety most clearly produced by the want of sanitary arrangements. Cholera has always attacked the town with severity. Notwithstanding this lamentable state of public health in the town and surrounding district, it is unsewered and uncared for.

It struck me that it would make my statements forcible if I was able to contrast with the foregoing towns one in the whole of which enlightened sanitary efforts had produced evident benefits, but I regret to say that I can find none such in Ireland. The smaller towns in the agricultural counties of England, governed by good laws and fostered by liberal and resident proprietors, alone afford such encouragement. In Portlaw, indeed, cared for by a great manufacturer and patriot in deeds, one may see a mixture of the healthy and prosperous with the sickly and ruinous. Mr. Malcolmson owns 332 houses, which are clean and comfortable, and for the past year preventable diseases have been one-fourth less frequent in them than in the remaining 278 squalid houses of the town, and fever is much less frequent. But there is no commission to sewer the town, or to cleanse or supply pure water to that part which is public, yet neglected, and from proximity to which the prosperous part suffers. The benevolent and able physician of the town writes to me that between the two classes of tenants there is the

strongest contrast in moral effect, in cleanliness, and in such small yet significant details as the increased culture of flowers.

The following 46 towns have not adopted the Towns' Act, although they possess the required population:—Parsonstown, 5,401; Arklow, 4,760; Portlaw, 3,852; Roscrea, 3,725; Macroom, 3,289; Boyle, 3,098; Mitchelstown, 2,922; Donaghadee, 2,671; Portarlinton, 2,581; Skerries, 2,557; Ballinrobe, 2,506; Charleville, 2,468; Newcastle, 2,449; Bantry, 2,438; Holywood, 2,437; Tuilow, 2,383; a town which is especially faulty, Buttivant, 3,372; Passage West, 2,288; Kanturk, 2,285; Listowel, 2,373; Dingle, 2,260; Whitehouse, 2,196; Gort, 2,097; Mountrath, 2,080; Dunmanway, 2,068; Legonell, 1,968; Moate, 1,960; Portaferry, 1,960; Chapelizod, 1,958; Rathfriland, 1,916; Kilkee, 1,856; Tramore, 1,847; Caherciveen, 1,802; Cappoquin, 1,774; Comber, 1,713; Castleisland, 1,702; Granard, 1,671; Edenderry, 1,661; Ballylary, 1,658; Askeaton, 1,637; Warrenpoint, 1,636; Tallow, 1,629; Ballycastle, 1,626; Ballaghaderreen, 1,583; Graigue, 1,552; and Donegal, 1,541.

By an amalgamation of neighbouring towns of some thousand inhabitants, many of which are uncared for, and by an expansion of the rateable area, so as to include the property of landowners who use the towns, or of absentees whose tenants use them, sufficient funds might be obtained to provide sewerage and water supply, and to pay officers for their inspection and regulation.

The following 15 towns—Bandon, Cahir, Clonakilty, Fethard, Tralee, Youghal, Armagh, Downpatrick, Dungannon, Enniskillen, Lisburn, Monaghan, Moy, Omagh, and Strabane, many of them parliamentary boroughs—are under the old Act, 9 Geo. IV., ch. 82 (1828), which is very faulty and insufficient, not providing for water supply, not giving separate rating powers for sewers in special parts, and granting no borrowing powers for this purpose.

It is astonishing that these towns have not exchanged this old and cumbrous Act for the new one; but perhaps it was because houses under £5 valuation would then be rateable, and one-seventh of the town property in Ireland would thus escape taxation.

Fever has for centuries been the reigning disease in Ireland; epidemic in other countries, it is endemic with us, and in exhibiting the prevalence in various towns, I am not recording an evil the dangers of which have passed, for after having been nearly twice as frequent throughout Ireland in the last quarter of 1864 as in that of 1863, the Poor-law Commissioners report that "for the first five or six weeks of the present year the number of cases of fever continued steadily to increase, and the disease became in a few localities alarmingly prevalent." In February the Poor-law Inspectors reported as follows:—Mr. Hamilton, north-western district, "There has been epidemic disease in some few parts of my district, but I attribute it more to defective sanitary arrangements in few towns and villages than to any want of proper food." Dr. Brodie, western district: "The fever has been generally confined to towns, and from the class of persons attacked it is evident that it is not attendant upon destitution." Dr. King, in the same district, corroborates the latter statement, adding that fever prevails most intensely in towns through which rivers flow; for example, Limerick, Ennis, Boyle, Sligo, &c., Mr. Bourke for the midland counties, Mr. Horsley for the south-western district, and other inspectors repeat the same statements, that the fever was not due to destitution, that it prevailed in towns and spread to the middle and upper classes, among whom it was proportionately more fatal. For reasons previously stated, the death-rates in the various unions and dispensary districts containing towns which I have alluded to may not be themselves very striking, but they become so when compared to those of purely rural unions, while the death-rate of all these dispensary districts is 1 in 43, that of five rural unions from various parts of Ireland, Glenties, Bawnboy, Dunshaughlin, Ballinrobe, and Caherciveen, containing together an equal population, is just half, or 1 in 86, and that of all Ireland is 1 in 61, or one-fourth less.* In other countries the excess in mortality of civic over rural populations is not a fourth. Again, while on the average 1 in 52 is attacked with fever, in dispensary districts which contain towns but 1 in 281 of the people of the rural unions I have mentioned, or seven times as few, and 1 in 194 in all Ireland suffer, that preventable disease. It must be also remembered that the death-rates and fever-rates of towns would be still higher if we had returns concerning the townspeople alone, and not of the entire dis-

pensary district. However, the contrast is striking enough to convince me that a well-directed sanitary organization is capable of saving in Ireland thousands of lives yearly, and of protecting very many thousands from pestilence and the pauperism and misery which follow in its wake.

Even in Glasgow, a city noted for unhealthiness, to which I am afraid the presence of many of our poorer countrymen very much contributes, the annual fever-rate is but 1 in 200, and that of its very worst slum 1 in 31.

In the epidemic of 1818, 1½ millions of cases occurred, and the fever hospitals of Dublin, Cork, Limerick, Waterford, and Kilkenny, alone received 45,000 patients. Extreme droughts, which dried up the uncertain supply of water from wells and putrefied the stagnant sewage, had much to do with the spread of this pestilence.

The death-rate for the population of all towns of over 2,000 inhabitants, was, according to the Census Commissioners in 1841, nearly twice as high as that of rural populations, yet municipal authorities cannot comfort themselves with the belief that it was necessarily so. There is nothing in a well-regulated town to kill people faster than in the country; and even in London the rate of mortality has for some years fallen below that of all England. The causes of unhealthiness which may surround the peasant are under his own control; but the villager or citizen suffers through his careless neighbour, or his neglectful local authority, and the State should provide a remedy.

If I have shown that the sanitary state of Irish towns is bad, it is fit that I should propose some remedies, and those which I do propose and which I have arranged under six heads, are in no way experimental, but have been tried and found perfectly effectual for many years in England.

1st. A central authority analogous to the Local Government Office and Medical Department of the Privy Council in London. When one-tenth of the inhabitants of any town petition the Home Secretary, or when the death-rate rises to 1 in 43, an inspector competent to examine its water supply, sewerage, and other sanitary circumstances, and to investigate the manner in which the lodging-house, and Nuisances, and other Sanitary Acts are carried out is despatched to it. The appropriate remedies are urged upon the local authority, and every aid in the way of loans, suggested by-laws, instruction, and supervision is given by the central office. Although, therefore, the Public Health Act (1848) and the Local Government Act (1858) are, like our Towns' Improvement Act, permissive, many hundreds of towns and populous places have been by proper representations induced to adopt their admirable provisions, while a town of 200 inhabitants in England and 700 in Scotland may adopt the Health Act, none except those of 1,500 can take advantage of the similar measure in Ireland. They give a power to local boards which is not contained in any Irish act—namely, that of prohibiting the habitation of any house, which, by reason of its being infected or structurally unfit, ought not to be dwelt in. These acts, which have lowered the annual mortality of the towns in England by 6 per 1,000, were prepared by such statesmen as Lord Morpeth, Sir G. C. Lewis, and Sir George Grey, and although it is declared that they shall not extend to Ireland, the lamented nobleman I have named, who was then Commissioner of Woods and Forests, expressed a hope that the Public Health Act would afterwards be granted for this country. The Medical Officer of the Privy Council, Mr. Simon, has also, according to his yearly report, conducted personally, or through assistants, many vitally important investigations throughout England, as those into the causes of infant mortality, the working of the vaccination laws, the food supply, and house-accommodation of the labouring classes, the parasitic and other diseases of cattle in relation to the supply of meat and milk, the peculiar diseases of various industrial classes, accidental and criminal poisoning, diphtheria, and other epidemics. No similar inquiry has been ever instituted in Ireland, except the examination by Sir W. Wilde and Dr. Jacob into the causes of ophthalmia in the work-houses of Athlone and Tipperary. The prevalence of eye diseases, of certain forms of skin diseases, and of convulsions among the children of the poor, the health of miners, and of linen and muslin workers in Ulster, and the state of burial grounds, to which I will just now allude, are subjects of equal importance which in this country have never been approached. Since the last cholera epidemic, the Poor-law Inspectors cannot be said to have been engaged in any investigations similar to those conducted by the Medical Officer of the Privy Council. Those which were directed to the alleged destitution this year cannot be regarded in this light, as they did not concern the management of towns, sewerage, water supply, lodging-houses, nuisances, state of burial grounds, &c., and indeed they were declared

* Sir William Wilde, in the sanitary part of the census of 1841, brings out the same fact, for he shows that for that decennial the deaths by fever had been only half as many in the rural as in the civic population, even excluding all cases treated in hospitals.

by the Commissioners "somewhat out of the limits of the official business of the department." Indeed, while we have in Ireland the best organized system of curative medicine in the world, we cannot be said to have any arrangements for prevention.

2nd. The adoption of an efficient system of sewerage. I am aware that it is still a debatable question whether our rivers shall continue the main sewers of towns, or whether the sewage shall be utilized directly on the lands; but in any case, there is need that the ground, water, and even atmosphere of towns shall not be saturated with pernicious refuse. I am happy to say that under the Sewage Utilization Act of the present year, poor-law guardians and town commissioners are empowered to construct sewers, and to borrow money on the security of the rates for the purpose, from the Public Works Loan Commissioners. It remains to be seen whether, without any pressure from a central authority, and with the fear of increased rates before them, they will do so at all, and whether they will construct them in the efficient way they are constructed in England under the direction of the Local Government Office, it strikes me that the Board of Works in Ireland should be granted similar powers with respect to sewerage and water supply; and, perhaps, that department might be constituted a central authority to which one interested in the health of his town, yet despairing of improvement as long as the ignorance, short-sighted parsimony, and insensibility of local bodies is uncontrolled, might apply.

Mr. Simon, the Medical Officer of the Privy Council, in his last report most justly remarks:—"With regard to these elementary necessities of health, I venture to submit that the time has now arrived when it ought not any longer to be discretionary in a place whether the place shall be kept fitly or not. Powers sufficient for the local protection of the public health, having first been universally conferred, it next, I submit, ought universally to be an obligation on the local authorities, that those powers be exercised in good faith, and with reasonable vigour and intelligence." In an admirable commentary on the Towns Improvement Act, which was published in 1861, it is justly remarked:—"The fact of a town being under the Improvement Act gives the grand jury a plausible reason for not interfering for a purpose apparently provided for under the municipal government; besides grand juries most feel that the towns of any importance will one after another be withdrawn from their jurisdiction, and thus it seems foolish to improve to-day for people at the county's expense who may to-morrow cease to be contributors to the county funds."

3rd. A safe water-supply. When it is remembered that diarrhoea, cholera, and typhoid fever are propagated by means of contaminated water, and that probably other diseases have a similar origin, no arguments are needed to prove that a supply of that requisite pure and above all suspicion, is desirable for towns; every town I have mentioned to-night derives its supply from superficial wells or pumps, or from the rivers in towns; and such sources are rarely, if ever, free from pollution. Some years ago, Dr. Voelcker, the great chemist, found that the water of many superficial town wells contained three times as much organic matter as the tank liquid with which Mr. Mechi was manuring his land. Three months ago nineteen persons in one large house were attacked with typhoid fever from drinking the water of a well which was within four yards of a cesspool. As is often the case with regard to the most poisonous water, this specimen was beautifully sparkling, and had no bad taste or smell, but the microscope displayed crowds of organic forms, and analysis revealed nitrous acid and organic matter in abundance.

I believe the geological structure of Ireland does not often afford artesian wells, but deep wells or pumps, the circumference of which should be of cemented brick and puddled, to prevent soakage, and placed in situations away from cesspools should be freely provided in small towns and villages. For larger towns—Sligo, for instance—a supply from a lake, stream, or catchment basin in a pastoral district, should be always obtained and distributed by pipes to all houses in the town. A river which has passed a town should never be used as a source for drinking water, even if the sewage should come to be utilized on the land. The sewage water from the town of Croydon, after being irrigated over the farm for the purpose, passed apparently pure and limpid into the River Wandle. I have examined it, however, microscopically and chemically, and find it loaded still with organic matter. Indeed when kept it throws down a filthy sediment and smells badly. A fortnight ago at the Society of Arts, Mr. Baily Denton, the eminent engineer, proposed a mode of water supply for small villages, which was approved by other eminent engineers and guardians. It was, that the water of under drain-

age, which has filtered through four feet of earth, and which is remarkably pure, should be collected in the most pastoral neighbourhood of the village. For a town of 100 houses, from seven to twelve acres would suffice, and the whole expense, including the purchase of a reservoir, four tenths of an acre in extent to give water for the four summer months when wells are dry, would be £415, which a yearly payment of 5s. 3d. on each house for thirty years would refund.

In none of the towns I have alluded to did the cholera contagion when once introduced starve out, but, on the contrary, spread with rapidity and virulence, and this in itself is a proof of imperfect sewerage and water supply.

We are told that in the middle ages when pestilence seized upon a town, the citizens put to death the physicians, believing they had poisoned the wells; and if cholera should visit us, and spread in some towns where the authorities provide no safe water supply they will deserve punishment, although of a milder nature than that which the barbarism of the dark ages inflicted.

Of the 54,552 cases of cholera in 1832, and the 45,698 in 1849 throughout all Ireland, nearly all occurred in towns, and in these two epidemics 40,496 lives were lost.

4th. The extension to Ireland of the Nuisances Removal and Diseases Prevention Act of 1855. I remember that you, Sir, with your colleagues in the Poor-law Commission, in two successive reports, urged on the government the extension of this Act, which had superseded the faulty Act of 1848, and I am rejoiced to see by a communication of yours to the Municipal Council of Waterford, that the law officers are engaged on the subject. Ireland has still to be content with an act which eleven years ago for England, and ten years for Scotland, successive Parliaments declared defective. This desirable act, however, does not give power to prevent overcrowding in any house which contains but one family, and thus wretched hovels and stables converted into human dwellings become greatly overpopulated.

It has been suggested that the constabulary, instead of relieving officers, should carry out the provisions of the Nuisances Act, and that they should receive part of the fines. As this force is more than twice as numerous with us as the analogous body in England, and as their time is not fully occupied, there seems to be no objection in the arrangement. Under the present system it is undeniable that an epidemic is often at its height before any precautionary steps are taken. By the abolition of the Vestry Act (1819) officers of health were taken from parishes. Clauses directly ordering that injurious wells should be closed, that damp fetid earth under the floors of houses should be replaced by dry brick rubbish, and one directing the licensing of cow-houses, and thereby giving powers to compel sewerage, water supply, and to prevent overcrowding in them, and the retention of manure, are very desirable. The last-named addition to our sanitary acts seems now more necessary than ever when there is dread of invasion by the cattle plague.

My friend, Dr. Drutt, at the Metropolitan Sanitary Association, on Thursday, proposed that local boards should also have a lien on the premises to cover all expenses for their sanitary improvement which should be recoverable by their sale. Mr. H. Dix Hutton has pointed out to me, that it is desirable that the expenses for the removal of certain nuisances should fall directly on the occupier and not solely on the owner. In municipal towns the commissioners should be the sole authority for the removal of nuisances, for at present, as the responsibility is divided with the guardians, the work is done by neither.

The verbiage of this act should be most clear, which would be very advantageous, as magistrates will not act if it be at all ambiguous, and local boards will not undergo the expense of an appeal.

5th. Lodging-house Acts, similar to that now possessed by Dublin, for towns over 10,000 inhabitants. Dr. Mackesy has explained that few labourers' houses are now built in the country surrounding towns, as they would be subject to poor rate and grand jury rate, so that the lodging-houses in towns are becoming every day more crowded. The Towns Act only allows inspection in towns of over 3,000 population, and then only in those which are set for less than one week. On certificate of the medical officer of health, or indeed any medical practitioner, there should be power to compel a person ill with fever or other contagious disease to be removed from a lodging-house to hospital.

The local authorities of English towns of over 10,000 inhabitants may erect and maintain public lodging-houses and may borrow money for the purpose from the Public Works Loan Commissioners, but there is no such power for any of the Irish cities or towns. The most crying evil of our large cities

is the degraded state of the tenemental dwellings of the poor, who are thereby lowered almost to that state of physical and moral decline which in American cities is recognized by a name less elegant than expressive—"tenant-house-rot."

6th. An inspection of burial-grounds similar to that conducted by the Burial Acts Office in London, and from which the greatest and most striking benefits to public health have resulted. Every burial-ground in England was examined by direction of the Board of Health in 1842 and in 1850, and again on the appointment of permanent inspectors, and upon any complaint whatever of the state of any cemetery, or when a new one is contemplated, the fullest investigation is made by these officers. No inquiry has ever been made into those of Ireland, although they are nearly all intramural, many of them are overcrowded, and there is evidence that some are in such a condition as to pollute the water and air of the towns with the effect of producing a palpable increase of epidemic disease. In the case of a large cemetery, in which I gave evidence before the Privy Council, the water of a neighbouring much-used well contained ten times as much organic matter as is present in good drinking water. The aggregation of human remains in this churchyard raised the surface from the ground level of the neighbouring houses to the height of their second windows, and the place was constantly pervaded by an offensive smell. It seems desirable that there should be in Ireland as well as in England some independent officer who could judge of the suitability of any site for a cemetery in regard to soil, drainage, position with respect to prevailing winds, and other sanitary circumstances; and one of the highest authorities on the subject in England assures me that "power to appoint inspectors quite removed from local influence is indispensable to the successful working of a Burial Act. Local inspectors would, I am sure, be involved in interminable difficulties and disputes." The view is still more true with respect to inspectors for other sanitary purposes. The Medical Officer of the Privy Council, before which body such matters are tried, would be a judicious and independent adviser, or perhaps a sanitary inspector added to the poor-law staff might fulfil the duties of both these offices.

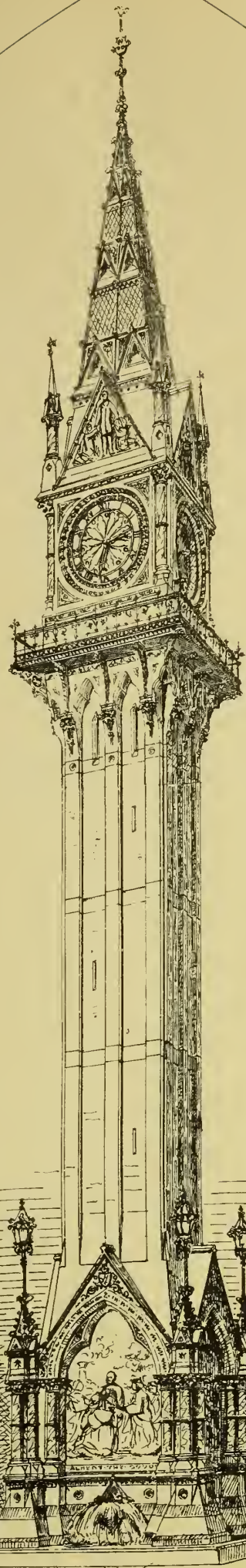
The Scotch Act gives power to any two members of a parochial board, or to any ten ratepayers, to demand examination of the condition of any burial ground.

Since the reports of the Children's Employment Commission have appeared, it has been generally conceded that laws are required for the regulation of workrooms similar to those which have done much good in other factories; and in no part of the kingdom are they more necessary than in our northern mill and linen-making towns, where there is an excessive mortality by consumption.

The acknowledged failure in obtaining complete returns of deaths in Ireland seems to me to demand that the Registration Act be assimilated to that of England, where no body can be interred without a certificate from a medical man as to the cause of death under a penalty of £10 on the undertaker, sexton, or clergyman concerned in the burial. The relative or other responsible person is the informant, and if the medical man is not satisfied that the death was from natural causes, and in every case of accidental death he informs the coroner, and thus great aid is given in the detection of crime. The fact also of a certificate as to the actual cause of death being absolutely necessary causes no severe malady to be neglected, which is often the case in this country, despite our admirable system of medical charity. The Medical Registrar has suggested to me that the fittest person in this country on whom to impose the penalty would be the undertaker, as to many rural graveyards there is no sexton attached.

There is probably no division of our statutes which require codification more than those relating to public health; sanitary provisions have been strung together in a truly patchwork fashion. There are none likewise which require more to be assimilated in all parts of the United Kingdom. It was therefore that I endeavoured last year to draw a parallel between those of England and Ireland, and it was suggested that I should attempt to submit the heads of a comprehensive measure. However, regarding Act of Parliament-making as the statesman's or the lawyer's province, I hesitated to do so; but as no such person has interested himself in the matter, it may not be presumptuous in one who, although belonging to a profession almost unrepresented in the legislature, has been freely acting under the defective sanitary laws we possess, to suggest a few amendments. I have, therefore, arranged the following propositions,* mainly founded on the marginal summaries of English Acts. I have not thought it necessary to draw up

* These, together with the discussion which followed the reading of above paper, will appear in our next number.



J Lewis Little 29, Dame St Dublin

DESIGN FOR ALBERT MEMORIAL CLOCK TOWER BELFAST.

RAFFLES BROWN FRIAR ARCHT

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Procedure and Penalties Sections, nor have I interfered with the Towns Improvement Act (1854), to which this proposed Act might be supplemental. Perhaps the easiest assimilative process would be to give power to the Lord Lieutenant in Council to adopt any of the clauses of the English Public Acts.

In conclusion, I will assert that these statistical facts and suggestions for amendment would have been long since brought under public notice with greater effect by my medical brethren who possess local information in various parts of Ireland, were it not for the natural reluctance on the part of professional men to agitate public questions, the effectual settlement of which would seem to advance their personal interests.

But how long is this state of things to last? Are our people to continue to be decimated by avoidable pestilence because a few professional men might derive emolument from the measures taken to stay it.

DESIGN FOR THE ALBERT MEMORIAL CLOCK TOWER, BELFAST.

THE illustration in this number is a design sent in to the recent Albert Memorial Competition in Belfast, by Raffles Brown, which, although not one of those which came to the front and elicited such warm discussion, we have selected as being a very graceful and meritorious composition, and admirably adapted to the site. Viewed now, however, merely as an ideal clock tower, it is unnecessary that it should be accompanied by any of those particulars as to height, materials, &c., and proposed cost, with which it was necessary to invest it for the special purposes of the competition.

SOCIETY FOR ARCHITECTURAL STUDY. INSTITUTE OF ARCHITECTS.

WE are requested to state that the lecture on Thursday evening next will be delivered by Mr Thomas Drew, Fellow; subject, "The Rudiments of Gothic Moulding," or in lieu thereof "Practical Perspective." The lecture on the ensuing Thursday evening will be delivered by Mr. E. T. Owen, and will probably be either of the above subjects treated by itself, or in continuation of the remarks of the preceding lecturer.

BLOTS BY THE WAY.

THERE are certain accessories of all buildings, to the disfigurement whereof use makes us strangely blind, those additions to a structure which our French neighbours call *appentis*. It is not very long since it seemed slowly to dawn on the architectural mind that chimney-pots of fearful ugliness added to handsome chimneys were disfiguring blots to a structure. There are still, however, a good many trifles to which we might still devote a little more thought. We throw our best energy, for example, into a design for an elaborate bench end, but so soon have we let it in all the glory of carving and polished oak—if it should happen to be in any "pew-system" edifice—straightway there arrives on the scene Mr. Painter, with his pots, who adorns it with No. 195 in great Roman characters, shaded to the right side with funeral black, and we look on with apathy, as if it were no concern of ours. Or we finish an elaborate street façade, and then hand it over without a qualm to the tender mercies of Mr. Blacksmith, who crowns it with a great enchevaux-des-ris on either flank, with an awful series of harpoon strikes at every possible angle with the horizon, to encourage the adjoining tenants when they ascend into their house-tops to confine their perambulations to their own proper tiles. There is a fearful example of this kind of "caution," by the way, just erected in Fleet-street, over the flank of the new Provincial Bank building. Police regulations give us very ugly boards, with questionably delicate allusions to a some concluding reference to a penalty, in very obtrusive situations, which are not pleasant additions to a building. Bad as they are, however, it is some satisfaction that we have not yet attained to the height of civilization which our Gallic neighbours have in this respect, and our walls are still strangers to notifications of an unnecessarily coarse and plain-spoken description, in very distinct characters of at least a foot in height, and extending to an indefinite number of metres along the prohibited territory. Some things, however, "they do manage better in France." Notably the new name boards at the corners of the streets in bright enamelled iron, and in neat and legible characters, are a vast improvement on our dirty ill-lettered black and white painted

boards. These are one of the inevitable *appentis*—we must use the French term for want of a better—that we would do well to reform. Enamelled iron is, so far as we know, indestructible. Every shower of rain only washes it back to its original brilliancy, while it quickly dims the ugly face of its painted rival. The French name-plates generally have small neat black letters on a white ground, or, what is more lively in some positions, white letters on a scarlet ground, in the style of those hanging labels over stalls, which are half the life of industrial exhibitions. If we are to have these they should be tastefully arranged by some artist of experience in such things, before we go heavily into trade transactions in them. They are applicable to a vast variety of purposes—all sorts of railway uses—many architectural ends which we have not time to dwell on. Some specimens of this manufacture were exhibited at the late International Exhibition. A Mr. Benjamin Baugh is a manufacturer who has turned his attention to the subject, and we are glad to learn that a company is being formed at Birmingham, to produce his articles more extensively and cheaply, under the title of the Patent Enamel Company. They propose to apply this patent enamel also to the coating of water and gas pipes to prevent corrosion.

It is to be regretted that these street name plates did not receive some attention before our corporation treated us to the new fitting out of black and white boards, which we have just had over nearly all the city, not, however, before we wanted them.

"OUT OF THE FRYING PAN INTO THE FIRE."

THE late Sir Charles Barry was unquestionably the pioneer of the most important and most popular revival of Classic Renaissance which this century has yet witnessed; but before we review the clique which counts among its members such men as the architect of the Travellers' Club-house, and the author of the Imperial Assurance Office, we ought perhaps to notice a clique (*in articulo mortis*), the remnant of a school which not half a century ago was superbly supreme in all matters architectural. This areopagus of art, which then was composed of all the leading members of the profession—Sir John Soane, Sir Robert Smirke, Wilkins, Bovey, Cockerell—is now represented only by one architect of any note, and even that one in his latest Town hall (Hull) shows us that it is possible even for a Classic architect to be faithless to his classicism. The life of the Anglo-Classic school—if it can be said to have had any—was very brief, and necessarily so. There was no stamina in it, no energy, no back-bone, no love of life for its own sake, no fullness, because no spirit; but with an assumption of classical lore and an incessant fund of copy! copy!! copy!!! Architects humbugged the world for a time into the belief that they were men of "refined taste," grand masters of the mysteries of classic beauty, and initiated into all the mathematical subtleties which governed the marvellous loveliness of Greek proportion.

There was a grand, solemn, pompous march about the old gentlemen of this school which viewed from the present appears amusing enough, but which at the time was very crushing in its influence on the younger members of the profession. Orthodoxy and respectability bowed down their heads in reverence to the wonders which patience and the measuring tape brought forth. The skeletons of the Erechtheum, the Choragic monument of Lysicrates, and the Temple of the Winds were suddenly found to be applicable to all sorts and conditions of buildings; the original scale and situation were matters of no import whatever. To magnify the order of the monument to three or four times its real size was a common occurrence. *Per se*, it was good, and it was impossible to have too much of a good thing. To say that climate, site, and relation to surrounding buildings were all ignored—that in our manners and customs there was nothing in common with those of the people who reared them, would be condemnation sufficient; but when we add to this the neglect of scale, purpose, and position—when we find that men went even so far as to pile up one building over the other and cry "Lo! a tower!" there are no words in the English language, or for the matter of that in any other, strong enough to express our contempt of such puerile performances. Looking back from the position we now occupy, it requires nothing short of the monstrosities themselves to enable us to credit the amazing gullibility of the people of England at that time. We do not for a moment mean to say that we are faultless—nay, it is quite probable that a future generation may think (the present one might if it were accustomed to the operation) that the church architects of the Gothic revival were no better, but on the contrary rather worse, than the architect of St. Pancras, Euston road.

The lie which is half a truth is ever the blackest of lies.

And we may be just as certain that the building which is erected upon no other principle than the

cold principle of precedent, a building that is "half a truth," having the form as faithful to the original as a two-foot rule can make it, but every inch of it void of meaning, with nothing to tell us because its builders believed in nothing, is a far more dreary and painful object than the weak and semi-comic efforts in Euston-road. By the way, we offer to the combative Gothicists an extract which may serve them next time they have to receive a charge from the noble army of professors on the other side. We found it in the works of an English poet who flourished in the second half of the last century, when Classic rule was so strong that even poor Mason had to bow to it with a prefatory apology:—

Though Classic rules to modern piles
Should give the just arrangement, shun we here
By those to form our ruins; much we own
They please, when, by Panini's pencil drawn,
Or darkly 'graved by Piranesi's hand,
And fitly might some Tuscan garden grace;
But Time's rude mance has here all Roman piles
Levelled so low, that who on British ground
Attempts the task builds but a splendid lie
Which mocks historic credence. Hence the cause
Why Saxon piles or Norman here prevail;
Form they a rude, 'tis yet an English whole.
'And much I praise thy choice,' the stranger cried;
'Such chaste selection shames the common mode,
With mingling structures of far distant times,
Far distant regions, here, per chance, erects
A fane to freedom, where her Brutus stands
In act to strike the tyrant; there a tent,
With crescent crown'd, with scimitars adorn'd
Meet for some Bajazet; northward we turn,
And lo! a pigmy pyramid pretends
We tread the realms of Pharaoh.

—This from age
To age, from clime to clime incessant borne,
Imagination flounders headlong on.'

The British Museum, the Leeds Town hall, the Egyptian Hall, the Alhambra, the Brighton Pavilion are possible even nowadays. We have given up our allegiance to the Classic, cleared the house of one evil spirit, and swept and garnished it—for what?—the return of seven spirits worse than the first. In the pompous, grandiose work which has passed for art knowledge in the beginning of this century there was a reticence which went far to make men believe that something might be in an architect after all, but in the trumpery trivialities of the present time there is no room left for reticence; whatever building we select, its architect is sure to be "all there," as the modern phrase goes. About the very best buildings there is a lack of real stateliness which a multitude of columns cannot disguise and no amount of Flora and Fauna can conceal. If Messrs Broderick, Gibson, Robinson, Green, and De Ville had seen how utterly impossible it was to unite that kind of stateliness which belongs to the temple architecture of Greece and Rome with the necessities and the requirements of modern English life, their influence might have been very valuable in checking those wild fancies which seem to be so much in favour nowadays. The various forms of Renaissance stand much in need of that restraint and refinement which are developed by a careful study of the best works of Greece, and the men of what we may call the moribund clique cannot better serve the cause of art than by turning their attention to the want we have just mentioned; in fine, what we want in this school is just that which we require, and which we have pointed out as a desideratum in the Gothic school—refinement. That this quality can best be secured, both for one and the other, by making our architects more and more acquainted with the real spirit of Greek art, visible in pottery and coin and gem as in column and sculptured marble, has become a settled conviction with all the best architects and art critics of the day. The question with us is not so much whether the architecture of the future shall have more of Gothic or of Classic element. This seems to us comparatively immaterial, for the common sense of Englishmen will eventually demand such modifications of both one and the other that we do not despair of their finding, not long hence, a standpoint common to both, and a ground where the only principles worth having may be found to be identical. To hasten this desirable unity the students of art cannot do better than devote themselves thoroughly (it is no use to be half in earnest) to the Greek department of the British Museum; remembering that the times require not so much leavening with the somewhat luxurious art of the age of Pericles as with the more aërial, less realistic, art of an earlier period.—From "Art Cliques" in the *Building News*.

The Belgian Government has created a new functionary in connection with the Fine Arts; his duties will be to advise the authorities on all matters relating to Art submitted to him by the Minister of the Interior, and especially with regard to works to be executed by order of the Government; to superintend the execution of public works of Art; to visit and report upon Art exhibitions; and to execute whatever commissions the Minister may judge useful in the interest of Art.

THE CHEMISTRY OF NATURE.*

I COMMENCE this subject by observing that there is a distinct difference between chemical and mechanical power or force, and also between the effects of their actions as manifested to us in nature. Chemical power may be defined as that power or force which controls the combining of the elements which constitute natural existences. Mechanical power may be defined as that power or force which controls the movements and relative positions of natural existences after they are formed, with regard to each other, irrespective of their size, whether an atom or a world. For the present I shall confine myself to the foregoing definitions, as I shall have occasion hereafter to enter more at large into the actions of chemical and mechanical powers. Before the days of Copernicus philosophers entertained very erroneous ideas respecting the movements of the earth and other heavenly bodies comprising the solar system. It was that astronomer who exposed many false ideas, and in their place substituted correct ones on the general arrangement of the solar system, and the movements of the several members comprising the same. Tycho Brahe and Galileo followed Copernicus, and verified, by observations and experiments, the correctness of some of the theories which Copernicus had advanced. Then followed Kepler and Sir Isaac Newton. To the latter great philosopher we are indebted for the true theory of gravitation, which is one of the forms in which mechanical power manifests itself. Sir I. Newton's theory of gravitation and Copernicus's theory of the rotation of the earth on its axis have been verified by subsequent astronomers and philosophers, until in the present day the mechanical movements of the heavenly bodies are accurately understood, so far as relates to the sun, planets and satellites, because the times of eclipses of the sun, moon, and satellites of Jupiter—the transit of Venus and Mercury across the sun's disc—the occultations of stars by the moon crossing in front of them—the various conjunctions of the different planets—the rising and setting of the sun, moon, and stars—the times of new and full moon and its various other changes—and the rising and falling of the tides of the ocean—are all so well understood that they can be foretold to a second of time for all time. Still all these phenomena are only the "effects" produced by the action of mechanical power on the heavenly bodies. But when we come to examine the chemistry of nature, or those chemical changes which are continually taking place over the surfaces of the sun and planets to produce light and heat, wind and rain, hail and snow, vapour and dew, I believe I may safely say that up to the present time the scientific world is not only not fully satisfied, but very divided in opinion, on the theories advanced to account for these phenomena. In the midst of such diversity of opinion I feel fully justified in advancing new theories to explain and account for the chemical effects just named. I am aware that my theories can only prove valuable in proportion as they can be verified by well-established facts and experimental evidence. I take it for granted that before an audience like the present two or three substantial facts will be sufficient to prove a point, and that it will be considered unnecessary to encumber the subject with a multiplicity of experiments or facts, because nature is very systematic and always acts the same under the same circumstances. Before entering upon the details of the chemistry of nature, it will be my object to define what nature really is, and also those elementary principles of which it is composed. Nature is composed of numberless stars, comprising suns, planets and their satellites, and comets. These are continually moving in space, in regular order, at different distances from each other. Each one of them is limited in size, and either surrounded by an atmosphere, as suns, planets and their satellites, or followed by an atmosphere, as comets. If we take the planet we inhabit, and of which we form a part, as a sample of the other heavenly bodies, and argue by analogy, I believe it can be shown that nature is composed of *three*, and only *three*, constituent principles or elements. These are—1st, matter; 2nd, caloric; 3rd, power. I believe it can also be shown that each of the constituent elements I have named exists in *three* states, and that the three elements are always combined together in certain and definite proportions in every natural existence. In nature matter is an element always combined with caloric and power, but capable of undergoing changes in its relative proportions with the other two elements to form what we understand as solids, fluids, and vapours, as the earth, the ocean, and the atmosphere. We only know of the existence of matter in one of those states—that is, as a solid, a fluid, and vapour. In nature caloric is an element always

combined with matter and power in certain definite proportions. It is capable of undergoing changes with the other two elements and altering the states of matter from solid to fluid and to vapour, and *vice versa*. With matter and power, caloric is capable of existing in three states—1st, when it is united in chemical combination it governs the state of the matter with which it is combined, causing it to be either solid, or fluid, or vapour; 2nd, when it is mechanically associated with matter it is capable of passing from one body of matter to another without altering the state of the matter with which it is associated—in this state, and only in this state, it is capable of being felt as *heat*, and within certain limits the quantity thereof can be measured by the thermometer; 3rd, when caloric causes the matter with which it is associated to become incandescent it is seen as *fire or light*, and renders the matter with which it exists visible to our sense of sight. In the first state, caloric has been called *latent heat*; in its second state, it has been called *sensible heat*; in its third state, it has been called *luminous heat*. In nature it only exists in one of those three states. In nature power is an element always combined with matter and caloric. As it manifests itself to us it may be classified under three distinct heads—1st, as *mechanical power* it combines with and governs the motions and relative positions of all particles and bodies of matter towards each other throughout nature; 2nd, as *chemical power* it governs in uniting in combination, in definite proportions, the other two elements, and it unites with them in producing what is called the *chemical union* of bodies, which includes the formation of all natural existences—it also governs the decomposition of such existences; 3rd, as *vital power* it governs the formation and development of all organized vegetable and animal existences, and while united with them it constitutes the life of such existences. Upon careful examination of the ever-changing and various natural operations which are manifested to our senses, I believe no other element can be detected, neither would any other appear to be necessary, because those already pointed out are sufficient to fully explain every phenomenon that nature presents to us. I wish it to be clearly understood that the elements, and their states of being as pointed out, constitute natural, changeable existences, and in no sense include the Creator of those existences. Natural existences are limited in size, power, and duration; He is Ubiquity, Almighty, and Eternal. Little more need be said of the actual existence of matter, and that we only recognise it in nature in one of three states—that is, as a solid, a fluid, and a vapour—because it is so presented to us in every view we take, in every direction we move, and in every effort we make. It is so evidenced in the grain of sand and the solid earth upon which we travel—in the sparkling dew drop and the mighty ocean—in the fragrant perfume which emanates from the rose and the vast atmosphere which enfolds the earth. But the elements caloric and power, being less tangible than matter, require to be more carefully watched and investigated in order that they may be understood and the important results they produce recognised. For the purpose of more clearly explaining the existence of caloric, and the changes which it effects in nature, I would state that all natural existences, being compounded of certain elements, and caloric in a latent state and in various proportions being always one of them, it necessarily follows that, as they undergo changes, so must the caloric which forms part of them. In some cases, when two or more different existences chemically combine, they cannot, in their combined state, contain the same quantity of caloric as they did in their separate states. When this occurs such superfluous caloric manifests itself as heat in the newly-formed existence in which it was set free—raises its temperature, and then diffuses itself among other existences to effect an equilibrium of temperature. In other cases, when two or more different existences chemically combine, and in their newly-combined state require more caloric than they did in their separate states, then heat must be absorbed from the newly-formed existence, and the temperature thereof lowered, until it attracts heat from surrounding existences to effect an equilibrium of temperature with them. In this way heat is continually being produced or absorbed in the various chemical changes which are continually going on over the surface of the earth, and in the atmosphere which envelopes it, the proportion of caloric being always more or less disturbed during every chemical change that takes place, and heat either produced or absorbed. In proof thereof I will now adduce a few from a large number of experiments, which have been well tested and published, to prove and further illustrate the point to which I am now inviting your attention:—

Latent Heat is necessary to preserve Bodies in the Solid, Liquid, and Gaseous states—If a thermometer be fixed in a pan of snow over a fire; it will, if higher than 32°, sink down to that

point, and remain there until the snow is completely converted into water. After the snow has been melted, the thermometer will rise in proportion as more heat is applied; and will continue to do so, until it arrives at 212° the boiling point.

Caloric becomes Latent in Bodies, when they change their Densities—If any weight of snow, or pulverised ice at 32°, be mixed with an equal weight of water at 172° it would naturally be expected that the temperature of the mixture would be 102°, or one half. But this will not be the case, for if the thermometer be applied, the temperature of the whole will be found to be only 32°.

Snow with Nitric Acid—Mix seven drams of snow, with four drams of diluted nitric acid. If the thermometer be at 32°; it will fall to —30°; being 62 degrees lower than the freezing point of water. Sulphuric Ether will freeze in this mixture.

Variation, with Snow and Muriate of Lime—Mix two drams of snow, with three drams of muriate of lime: the thermometer will sink from —15°, to —68°. This mixture will freeze nitric acid.

From these experiments it will be evident that in each case, whether by mixing ice and hot water, snow and nitric acid, or with muriate of lime, large quantities of sensible heat are absorbed in the newly-formed mixture. I will now notice two or three experiments to prove that, in other cases, heat is produced by mixing different substances:

Intense Heat caused by the Mixture of Sulphuric Acid with Water—If three ounces of sulphuric acid are put into a tall beer-glass, and one ounce of water be added; the mixture will evolve so much heat, that a thin glass tube filled with cold water and immersed in the beer-glass, will actually *boil*; at the same time, if a thermometer be immersed in it, the temperature will be found to be 300°, that is 88° above the boiling point, 212°.

Intense Heat produced by Mixture of Fluoric Acid with Water—Place a tea-cup or gillipot, containing an ounce of water, on the hearth, and pour into it (at arm's length, the hand being defended by a glove), half an ounce of fluoric acid, from a leaden bottle. Sudden ebullition and most intense heat will be the consequence.

Deflagration of Copper and Sulphur when fused together—If one ounce of copper filings be melted with three drams of sulphur, the mixture suddenly explodes, and becomes red-hot, as the two substances unite. If taken from the fire in this state, it continues for a considerable time to shine vividly, and with great beauty.

Deflagration of Platinum with Tin—If about equal bulks of platinum and tin be heated to redness, in contact with each other; they will combine suddenly with great vehemence, and a very considerable extrication of light and heat, which will continue for some time after their removal from the fire. The experiment is easily made, by enveloping a little bit of tin in platinum foil, and heating it by a blow-pipe on charcoal; a sort of explosion takes place at the moment they combine, and the alloy runs about, burning like ignited antimony.

Hitherto I have confined my experiments to solids and fluids. Similar results take place when fluids are changed into vapours.

Latent Heat combines with Liquids when they are converted into Vapour—If water be heated to 400°, in a Papin's Digester, and the vessel be suddenly uncovered, one-fifth part will rush out, in the form of steam; and the temperature of the remaining water, will, at the same instant, sink down to 212° (the boiling point), losing no less than 188°—the difference between 400 and 122. These 188° must have become latent, and must have combined with one-fifth of the water to form the steam; for if the thermometer be applied to the steam, it will also be found to be only at 212°. Now, only one-fifth of the water was converted into steam; consequently, in addition to its own 188°, and 188°, it must have deprived the other four-fifths, each of their 188°; and 188 multiplied by 5, produces 940, which is pretty near to 1,000°—the quantity of latent caloric required to keep steam in its elastic form. Steam must part with an immense quantity of heat, before it is condensed into water; and with much more, before it can be converted into ice.

If sulphuric ether, or any other rapidly evaporating fluid be placed in one vessel, and water, with a thermometer inserted into it, in another vessel, and both be put under the receiver of an air pump. On rapidly exhausting the air the sulphuric ether will vaporise; as it does so the thermometer will show that it rapidly robs the water of its heat and causes it to freeze into ice, such heat being afterwards retained in a latent state in the newly-formed vapour. In all vapours that are formed from fluids by means of heat, such heat becomes absorbed and is held latent in such vapours. But when water is decomposed by means of electricity, and changed into oxygen and hydrogen gases, by the positive electricity chemically combining with the oxygen, and the negative electricity chemically combining with the hydrogen, such electricities contained previously to their combining with the oxygen and hydrogen, all the latent heat necessary to retain the oxygen and hydrogen as vapour in those gaseous states: but more on this point hereafter. If I have shown that all natural existences, whether they be solids, fluids, or vapour, contain latent caloric, and that as they undergo chemical changes such caloric undergoes changes also, that when it becomes liberated it produces heat, and that when it becomes absorbed it produces cold, it will be sufficient for my present purpose. Tables containing an account of the latent caloric contained in different bodies have been published, but such tables do not show the actual quantities of caloric contained in such existences, but only such portions as can be detected and measured when such existences are undergoing chemical changes. For example: steam is proved to contain 940° more of latent caloric than is contained in water, and water is proved to contain 140° more latent caloric than is contained in ice, but no one has yet been able to show what quantity of latent caloric is contained in ice. The same with many other substances. At present it is impossible to tell what quantity of latent caloric

* Paper read by G. F. Harrington, Esq., L.D.S., at meeting of the Isle of Wight Philosophical and Scientific Society, on November 6th, 1865.

they contain, although we may be able to prove the quantities they give out and absorb while they are undergoing certain chemical changes. Before I proceed to explain in detail the more noticeable chemical changes that take place in nature, I will say a few additional words upon the distinction between power and heat, because power has been confounded with heat, electricity, &c. That power is a separate constituent element in every natural existence, and quite distinct from heat, may be proved with very little trouble. When a steam engine, say a locomotive, is at work, it is not the heat generated by the combustion of fuel, nor the steam obtained by combining such heat with water in the locomotive, that constitute the power which moves the train. The power which moves the train is collected by confining the newly-formed steam within less space than it is disposed to occupy. It is then separated from the steam and heat before it is made use of. After it has been so separated it is conveyed by means of connecting rods from the piston to the wheels to move the train. After such power has been separated from the heat and steam, such heat and steam are allowed to escape into the atmosphere, where the heat is soon separated from the steam, leaving the aqueous matter to fall on the earth as water. Therefore, the heat and steam generated in a locomotive never come in contact with the wheels; it is the confined power, after being separated from such heat and steam, which is communicated to the wheels to put the train in motion. The same explanation, so far as separating power from steam, will apply to all machinery driven by power obtained from steam. Again, when we wind up a watch or clock we place a store of the power we possess in the watch or clock, by means of the spring or weight, to be used for the purpose of keeping the machinery in motion for a given time. When we store up power in such cases we do not store up any heat with it. If the temperature of such watch or clock is tested by a thermometer before being wound up, and again after it is supplied with power, it will be found that not even the fractional part of a degree of heat has been added to the machine. Therefore, power is an element perfectly distinct from heat; at the same time it is as real and tangible as any other element, and can be collected, stored up and made use of to any degree of nicety that may be required. The phenomena resulting from the chemical action of nature, which I am about to notice, take place in the earth's atmosphere and that atmosphere being composed of gases, vapours, and electricity, I here invite your particular attention to two facts—one relating to the formation of vapour, the other to the formation of gas. It has hitherto been supposed that the vapours which ascend into the atmosphere are formed by heat only—in the same way as steam is formed: this is a mistake. Heat is undoubtedly necessary to the formation of vapour, but it can be clearly shown that that ocean of electricity, which electricians prove to exist over every part of the earth's surface, acts an important part in effecting the vaporisation of matter. Those who are acquainted with the generation of electricity, either by the plate or cylindrical machine, know perfectly well that in damp weather it is necessary to keep the whole of the apparatus as dry as possible, and that unless this is attended to, by warming and frequently wiping the glass, &c., the aqueous matter in the atmosphere so attracts electricity from the apparatus that a sufficient quantity cannot be retained for experimental purposes. This being a fact, and it being an equally well-known axiom in philosophy that "when one body attracts another it is itself equally attracted," it follows that as the aqueous matter in the air attracts electricity from the electrifying apparatus, so must the electricity on the apparatus attract aqueous matter from the air; hence the rapid deposit of water on the apparatus, which renders the frequent wiping it off so very necessary. In a similar way, the electricity in the atmosphere is constantly attracting those particles of water from the surface of the earth and ocean, which form the aqueous vapour which ascends into the atmosphere. If such vapour were formed on the surface of the earth and ocean, by heat only, in the same way as steam is formed, it would rapidly descend upon the earth again, in the same way as the steam from our steam vessels and locomotives is known to do, directly it enters the atmosphere and becomes deprived of its heat. But, during natural evaporation, the watery particles are not only attracted into the atmosphere by electricity, they are sustained therein also by it, so as to keep the air always saturated with a certain quantity of moisture. In the same way, vapours from every description of matter constituting the earth's crust are formed, attracted into the atmosphere, and sustained in it. This is further proved by the fact that during certain states of the weather, when it is thundery and the atmosphere is charged with an

unusual amount of electricity, the decomposing organic and other descriptions of matter, confined in drains and other places, become so excited, and vapours are so rapidly formed therefrom that they become troublesome, offensive, and annoying. It is not necessary that the temperature of the air should be very high on such occasions; on the contrary, these floods of offensive vapours are often generated in the winter, and in the night time when the temperature is much lower than during the day, which is another positive proof that the formation of such vapours does not depend solely on heat, but upon electricity also, an excess of which is always present on such occasions, which are generally succeeded by thunder storms; but more on this point hereafter. Having explained how vapour is formed, I now come to my second point, which relates to the formation of gas. If we collect electricity, either by means of the electrifying machine or by the galvanic battery, we can expend it in producing what is called the electric spark, in which case it becomes light and is disposed of by being absorbed by surrounding bodies. But if, instead of expending it to produce the electric spark, we convey it into water by means of a suitable arrangement of gold or plain wire, such electricity decomposes such water—i.e., it separates the particles of oxygen and hydrogen, of which water is composed, from each other—and as it does so the positive electricity chemically combines with the particles of oxygen and forms oxygen gas, and the negative electricity chemically combines with the particles of hydrogen and forms hydrogen gas, so that oxygen gas always consists of definite quantities of positive electricity chemically combined with definite quantities of oxygen, and hydrogen gas consists of definite quantities of negative electricity chemically combined with definite quantities of hydrogen. As these gases form they occupy more than a hundred times more space than the water and electricity, of which they are formed, occupied in their separate states. To illustrate this: if we take an iron cannon ball, say a 68-pounder, and heat it white hot, it will enlarge the cannon ball but very little; if we then take, say a cubic foot of water, and convey the heat from the iron shot and chemically combine it with such water, it will form it into steam, and the steam so generated will occupy some hundreds of times more space than the water and heat did while they were separated from each other; and so electricity when chemically combined with decomposed water, as before explained, will occupy more than a hundred times more space than they did before they were formed into gas. From the foregoing explanations it will be evident that the aqueous vapour in the atmosphere consists of particles of undecomposed water combined with heat, and held in the atmosphere by the attractive force of electricity; while the oxygen and hydrogen gases in the atmosphere consist of particles of oxygen and hydrogen, separated from each other, but chemically combined, the oxygen with positive electricity, the hydrogen with negative electricity. I have already explained that the earth's atmosphere contains not only gases, but vapours from every description of matter comprising the earth's crust, and also an ocean of electricity over the whole of the earth's surface, which sustains the different vapours in the atmosphere and prevents their falling upon the earth. It will be my object now to show by the currents of wind generated in the atmosphere that they are produced by the electricity decomposing aqueous vapour, and then chemically combining with the divided parts to form oxygen and hydrogen gases.

(To be continued.)

OUR DIRTY THOROUGHFARES.

THE state of the streets in the city having been brought under the notice of the Corporation at a recent meeting, a lengthened discussion ensued thereon, of which we give an abstract.

The town clerk read the estimates for the improvement rate and sewer rate for 1866, the former at 2d. and the latter at 4d. in the pound.

Alderman Durlin moved the adoption of the estimates. They were £2,100 less than last year. A portion of the taxation went in aid of the paving, lighting and cleansing of the city. He had no observations to make with respect to the paving or lighting, but he thought no person could have failed to observe the filthy state in which the streets had been during the past two months. The subject belonged of right to a committee, who, he was glad to say, had taken up the matter very warmly; but he thought that they required the earnest support of the Council. The citizens paid a large sum of money annually to the contractor, and they had a right to see that he performed his duty.

Mr. Norwood said that he was glad to perceive that No 1 Committee were acting vigorously in this important matter. Not only were the fashion-

able thoroughfares allowed to remain in a state of disgraceful filth, but heaps of rubbish were allowed to accumulate in the poorer streets, where scavenging was even more necessary than in the wealthy localities, because matter was thrown into the streets which should be removed daily. He believed that last week it appeared that the contractor had made thirty-one omissions of duty. But he wondered that the contractor did not perceive that the manner in which he performed his duty was not only a serious annoyance to passengers, but gave himself double trouble. His men swept the middle of the street and gathered the mud in heaps at the sides near the footways, so that the passers-by were befouled with mud, the sewers clogged with mud, and the matter scattered through the streets by the vehicles which passed. It would be just as easy for the contractor to have his carts remove the mud heaps as soon as the streets were swept. The citizens in general angrily complained of the state of the streets.

Mr. Dennehy said that in former years the same complaints used to be made that he had heard from the gentlemen who preceded him. It was then said that the condition of the streets was due to the manner in which they were macadamized, and of the stuff of which the macadam consisted. They then saw an elaborate system of pavement introduced, and that was now in its turn being supplanted by another system of macadamizing. Cope street had formerly been well paved, but latterly the pavement was torn up and the new kind of macadam laid down. Castle-street, he remembered, when the carriage-way was as hard as iron. That splendid carriage-way was also torn up, and now the wheels of the passing vehicles left tracks in the mud as they would in passing through a field. There should have been more consideration before the new system of laying down the streets was adopted. It was his opinion that the elevation of the centre of the streets under this new system was too great and might possibly be dangerous.

Mr. Whelan complained that Committee No. 1, submitted too easily to the opinions of their officers. In fact the officers ruled the committee, and their statements were acted on as a matter of course. The pipes which were now put down for drainage were apt to be clogged, and he believed were almost all clogged at present. Mr. Whelan expressed himself favourable to the present system of macadamizing, but expressed his opinion that the interstices of the stones ought to be filled up with Portland cement, a system which had been tried in other places and had rendered the surface of the streets as hard as rock.

Mr. Devitt said that as a member of committee he must candidly admit that Mr. Ramsbottom, their contractor, had not fulfilled his duty to the committee or the citizens, but that fact was no reason why previous speakers should have made erroneous statements—statements which reflected unfairly upon the committee.

Alderman Joynt said that as chairman of Committee No. 1, during the past week when the state of the streets had been brought under consideration, it might be expected that he should tell what action the committee had taken in the matter. The question was not the best mode of making streets, or the best kind of pipes to lay down, but the condition of filth in which undoubtedly the streets at present were. The committee had met several times to consider the subject, and they had received the assistance of several members of the council. It was only too true that the state of the streets was exceedingly discreditable, and that the committee's book was full of complaints. No formal complaint had been made against the contractor; but the fact appeared to be, that after a very fine and dry summer heavy rain had set in, and the streets were allowed to become perfectly impassable. It was their duty to consider the contract as it stood, and therefore the committee had gone to work as practical men. It was not their desire to act harshly towards the contractor, but they could not help seeing that a sum of £18,000 per annum should not be paid away for a contract which was imperfectly fulfilled. Their overseers had reported at a meeting of the committee twenty-nine cases of neglect, and accordingly a letter had been written to Mr. Ramsbottom, who in his reply acknowledged the cases referred to. Accordingly a resolution was proposed and passed to the effect that Mr. Neville be called upon to report as to the number of men the contractor has in his employment; on the state of the streets, and the present mode of cleaning them, and that pending the information to be received by that report, that the contractor be fined 10s. for each of the 29 breaches of his contract. In conclusion, he wished to say that the applications made for improvements in different parts of the city were not calculated in the estimate of a second rate, and therefore, that while the rate proved adequate to the objects contemplated, the improvement debt continued to accumulate. He thought the committee should be directed not to exceed the estimates which were prepared, except by special leave of the council.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

A MEETING of the Institute was held at Great Brunswick-street on the 21st ult., Mr. GEORGE WILKINSON, V.P., in the chair. The attendance of members was more than usually large, to hear an interesting paper, entitled "Notes of the Pyramids," from Mr. Sandham Symes. A lengthened discussion took place after the reading of the paper, on some of the curious constructive features noted by Mr. Symes in his examination of them. The paper was referred to the Council for publication, and will appear on a future occasion in this journal.

The meeting then resolved itself into a general meeting of the members of the Class of Architectural Study, to consider what steps should be taken to increase the efficiency and numbers of the Class, Mr. E. T. OWEN, in the chair. A warm but good humoured debate ensued, when finally a compromise of conflicting opinions was come to, and it was resolved to request the council to alter the fee to be paid by persons not students of the Institute to half a guinea for the session, as the present use of the name student and the quality in fees paid, was calculated to cause confusion between the position of the regularly admitted students of the Institute and those known as "outsiders." It was also resolved that the name of the Society should be the "Association for Architectural Study," instead of as heretofore. Some kindly advice was addressed to the students, by Mr. Parke Neville, who said he did so as the oldest head present, in which he begged of them as young men, to avoid the rock on which Irishmen have too often split, that of disputing over fanciful distinctions and trifles of comparatively little importance. His remarks were received with warm applause by the students. The meeting then broke up at a late hour. We understand that Mr. Fogarty, fellow, will shortly follow up Mr. Symes' subject, by a paper on the "Architecture of Egypt of the Later Period."

LEARNED SOCIETIES' MEETINGS.

A meeting of the Belfast Architectural and Engineering Association was held on the 22nd ult., in the Museum. Mr. Thomas Beatty, C.E., read a paper on "Ferne's Locomotive." After entering in some detail into a description of the various improvements effected of late on the locomotive, in respect to carrying coal and water, and burning the fuel economically, Mr. Beatty explained more particularly Ferne's proposed engine. It is to have two separate sets of cylinders and two boilers, with a common fire-box in the middle; the whole is mounted on a bogey-frame to allow of going round sharp curves. It is also intended to carry a large supply of fuel and water. The discussion which followed, and the opinion of the chairman, were, on the whole, unfavourable to bogey engines, and to the doing away with the tender in the case of powerful locomotives.

The monthly meeting of the Edinburgh Architectural Association was held on the 13th ult. The President, Mr. David Robertson, in the chair. A paper upon "Building and Construction, more especially as shown in Engineering Works," was read by Mr. J. C. Hay. After some observations as to the way in which the professions of engineering and architecture intermingled, and as to many valuable lessons which the one profession might derive from some acquaintance with the works of the other, the lecturer proceeded to notice the details of drainage and water supply, principally as connected with the sanitary improvement of large cities. The various proposals for the utilization of town sewage were criticised and commented upon. A discussion took place with reference to the proposals of Mr. Ramsay, manager of the Edinburgh Water Company, to introduce the French system of dry closets. The feeling of the meeting seemed generally to be unfavorable to such a means of obviating present difficulties.

NOTES OF NEW WORKS.

Improvements are being made at Castle Annaghs, New Ross, the seat of Walter Sweetman, Esq. The principal apartments being decorated with enriched plaster coved ceilings, cornices, centres, &c., of very artistic character, expressly modelled from drawings furnished for same. The contract for the plastering, taken by Mr. Hogan, of Great Brunswick-street, has been executed in the most creditable manner, under the direction of the architect, Mr. Charles Geoghegan.

The parish church of Mountrath has been reopened by the Archbishop of Dublin, after restoration, jointly at the cost of the Ecclesiastical Commissioners and the Incumbent. An organ has been supplied by Messrs. Telford, Dublin.

An anonymous donor offers to contribute £1,000 towards the cost of erecting a new front, of an architectural character, to the Magdalen Asylum, Lower Leeson-street.

The parish church of Loughgall was reopened on the 17th ult., having been closed during the past fifteen months for the purpose of being remodelled thoroughly in the present style of church architecture. A fine organ, the gift of Mrs. Chomley, has been erected. The works were carried out by Mr. Richard Cherry, of Loughgall, builder.

The site for the new church at Bessbrook, Co. Armagh, has been purchased, and the work will be commenced immediately.

The Shelbourne Hotel, Stephen's-green, having passed into the hands of new proprietors, will be closed for some months for the purpose of being renewed and remodelled, as well as having considerable additions made to it. It is to be hoped that suitable changes will be effected to the building exteriorly; the position it occupies on one of the finest squares in Europe should certainly demand something in the way of architectural display. Mr. McCurdy is the architect.

Extensive additions and alterations are to be made to the Gresham Hotel, Upper Sackville-street, under the superintendence of Mr. A. G. Jones, architect.

The Eglinton Testimonial is, we learn, completed, and the site for it decided on, within the enclosure on the north side of St. Stephen's green, facing Dawson-street, with the consent of the Commissioners. The statue is by MacDowell, and is eleven feet in height.

An organ has been presented to Seaford Church by Lieut.-Colonel Forde, M.P., the lord of the soil. It has been altered, put into good repair, and erected in the church by Mr. J. C. Combe, of Belfast.

CHURCH BUILDING, ENGLAND.

The new church of St. Barnabas, Bell-street, Edgeware-road, has been consecrated by the Bishop of London. It has been erected, from designs by Mr. Blomfield, at a cost of about £4,000. Over the altar is a metal cross affixed to the wall, bearing in its centre a circular mosaic representing the Lamb on a gold ground. Above the chancel arch is a figure of the Saviour seated, painted in fresco, and the north window is of stained glass.

A handsome memorial window to the late Rev. T. J. Dallin, M.A., has been placed in Christ Church, Shooter's-hill, Kent, subscribed for by his congregation and friends. The subjects are the Crucifixion, the Ascension, the Last Supper, and the Agony in the Garden; and the whole design has been ably executed by Messrs. O'Connor.

St. Martin's Church, Kentish Town, has been consecrated by the Bishop of London. The church and parsonage-house have been built at the expense of one gentleman, and when completed will cost £10,000. The building consists of a nave and chancel, measuring from east to west 134 ft., and from north to south in the transepts, 77 ft., with additional north and south aisles. The tower is 100 ft. high to the parapet. Internally the nave and transepts at their junction form a cross, the chancel forming an octagon. The various stained windows are beautiful works of art. There are six bells. Mr. E. B. Lamb, architect.

St. Mark's Church, West Gorton, has been consecrated by the Bishop of Manchester.

A number of workmen have been engaged in repairing the figures on the summit of the north entrance of St. Paul's Cathedral, which have been in a decaying condition from the effects of the weather. Other portions of this noble building are undergoing extensive repairs and alterations.

A new church at Bolton, dedicated to St. Paul, and erected by subscriptions from the inhabitants at a cost of about £8,000, has been consecrated by the Bishop of Manchester.

The church of Barnham, near Chichester, has been reopened after restoration. The chancel is contemporary with the first possession of it by the Priory of Boxgrove, which is still apparent in the windows.

The foundation-stone of a new church to be called Emmanuel Church, has been laid at Clifton by Mrs. A. J. Knapp.

St. John's, Waterloo-road, London, a classical church of about the date 1820, with the usual characteristics of churches of that period, high pews, inconvenient "free seats," flat ceiling, &c., has been completely set in order under the architectural superintendence of Mr. Blomfield. The seats have been cut down and stripped of their doors, the skeleton-backed free seats ejected, leaving a grand approach to the east end, where a spacious quasi chancel has been formed and properly fitted. The whole of the church is coloured, walls, ceiling, seats, and even

galleries. At the east end the work is richer, the window being framed in an edging comprising a pattern of contiguous Greek crosses. Over the altar a large cross is painted on the wall. There is a credence and lectern, and proper seats for the choir. The base of the pulpit is so imposing as to suggest that the upper part is temporary only. The whole cost of the works was £1,300, including lighting and warming apparatus, and the drainage of the churchyard. The painting cost £400. It was executed by Mr. Heaton. The east window contains a representation of the Crucifixion, very religiously treated.

The old parish church of Bolton is to be restored by Mr. Peter Ormrod, a cotton-spinner, at a cost of £30,000.

The very curious little Norman building on the Newmarket-road, Cambridge, known as Stourbridge Chapel, is to be restored by the Architectural Society. There are few specimens of Norman work more remarkable, and it has long been a disgrace to the town and University that it has been allowed to remain in its present wretched state of dilapidation. The late Vice-Chancellor, Dr. Cookson, a man who always appreciates anything true and good in architecture and antiquities, did what he could towards shoring up the parts most likely to fall, but nothing but real repair will save this interesting relic of past times.

The first stone has been laid of the Church of the Holy Trinity, Chester. The church is about to be entirely rebuilt, having become dilapidated.

St. Stephen's Church, Copley, near Halifax, has been consecrated by the Bishop of Ripon. The cost has been about £9,000, of which £3,500 was raised by public subscription, the remainder being defrayed by Colonel Akroyd.

The parish church of Horsham, which for several months past has been undergoing considerable alteration and repairs, has been reopened by the Bishop of Oxford.

The Bishop of Chester has consecrated the new church of St. John, Boole. The land and stone for the church are the gift of the Earl of Derby. The cost, exclusive of these items, has been £5,000, £2,000 of which was subscribed in the neighbourhood, with an extra £500 for the organ; £1,000 given by Mr. W. Hall, of Seaforth; and the remainder by Lord Derby. The building will hold 850 people, and there are 400 free seats.

MISCELLANEOUS.

The Edinburgh Theatre has been opened with, among other attractions, "a novel and magnificent steel revolving curtain, which has been introduced for the entire protection of the auditorium."

A valuable improvement in the Lenoir gas-engine has been made by M. Hugon, of Paris. Hitherto, the explosion of the mixture of coal gas and air employed in those engines has been effected by means of a voltaic spark, but M. Hugon effects it by a contrivance which is at once somewhat cheaper and much more regular in its working. To the slide or other valves regulating the admission of gas and air into the cylinder he attaches little burners, supplied with gas under pressure, and he so arranges that the flame from these burners shall explode the mixture in the cylinder at the proper time. These little jets are blown out by the explosion, but are afterwards relighted by an outer jet, which is kept constantly burning. This simple improvement seems likely to considerably diminish the uncertainty and irregularity which have hitherto characterised the action of the gas-engine.—*Mechanics' Magazine.*

In Chicago a building 80 ft. by 160 ft., five storeys high, and weighing 27,000 tons, has recently been raised 2 ft. from its original foundations. It was done by means of 1,580 screws placed underneath the building and turned simultaneously. The work occupied three days.

Another step towards the completion of the Wellington Monument, Liverpool, has been taken by the insertion of a bronze bas-relief in the panel facing Line street. The design, which is by Mr. G. A. Lawson, is intended to illustrate that momentous incident at the battle of Waterloo when the duke directed the Guards to make that celebrated final charge which decided the day. The relief includes a group of about twenty figures, nearly 3 ft. in height.

The "Hayes" collection of paintings is on view at the Royal Hibernian Academy. It consists of fifty-five works, the productions of Mr. M. A. Hayes and his late father, Mr. Edward Hayes. They have been placed at the disposal of the committee of the Art Union of Dublin as prizes at the drawing which is shortly to take place. We understand the exhibition is free to all subscribers to the Art Union.

Messrs. Brassey, Fell, and Co. are about to commence the works for the railway over Mount Cenis. The line will be laid next spring, and in less than fourteen months there will be an unbroken railway communication between France and Italy.

An immense block of granite to be used for the base of the Wellington Monument at Strathfieldsaye, left Penryn last Wednesday by rail. The block weighs 35 tons, and the packing $2\frac{1}{2}$ tons—gross, $37\frac{1}{2}$ tons; the truck which received it weighs 8 tons—total 45½ tons. The length of the truck was about 25 ft.; the wheel base 14 ft. only.

The Belfast Banking Company have opened a branch at Randalstown, Co. Antrim, the fifth office which they have established within the last few months.

It is proposed to establish a Workmen's Club in Belfast, similar to those in useful operation elsewhere. Andrew Mulholland, Esq., D.L., J.P., Springvale, has contributed £100 to assist in establishing it, and several other millowners and merchants have also promised assistance.

Hitherto, when concrete has been applied in construction, it has usually been in the form of blocks, so as to resemble stone as ordinarily used. It is employed in the vaultings of a new barrack, which is being erected in Paris, in a different way. The span is thirteen feet, and the concrete is spread over the centering, and very carefully beaten down, being two feet thick at the spring, and ten inches at the crown. The exact composition of the material used is not known; but it affords a very strong vaulting, which may be whitened underneath at once, without plastering.—*Practical Mechanics' Journal.*

THE HEALTH OF DUBLIN.

(From the Registrar General's Weekly Return.)

In the Dublin Registration District the births registered during the week ending December 23, amounted to 196—99 boys and 97 girls. The deaths registered during the week were 174—89 males and 85 females. The deaths from fever were 15. There were 24 deaths from bronchitis, and 4 from pneumonia or inflammation of the lungs. Phthisis or pulmonary consumption proved fatal in 22 instances. Seven deaths were ascribed to whooping cough. One death was ascribed to measles, and one to scarlatina. Five deaths were attributed to diarrhoea, and 1 to dysentery. Convul-

sions carried off 13 children. Apoplexy proved fatal in three, and paralysis two instances. Nine deaths were the result of heart disease. Three accidental deaths were registered during the week, viz, one that of a boy, aged 5 years, who was accidentally burned; a boy, aged 4 years, died from the effects of a burn; and the death of a man, aged 28 years, resulted from the upsetting of a hackney carriage.

The number of deaths registered in the entire of the Dublin Registration District during the week represents an annual ratio of 29 in every 1,000 of the population by the census in 1861. The deaths registered in No. 1, North City District (Summer-hill), afford an annual ratio of 30 in every 1,000 of the population—the Mater Misericordiae Hospital is situated in this district; in No. 2, North City District (Coleman-street), which includes the Rotundo Lying-in Hospital and Jervis-street Hospital, the deaths registered amounted to 13 per 1,000; and in No. 3, North City (Blackhall-street), to 51 per 1,000;—the North Dublin Union Workhouse, the Hardwicke and Whitworth Hospitals, and the Richmond District Lunatic Asylum, are situated in this District. In No. 1, South City District (Meath-street), which includes the South Dublin Union Workhouse, the Cork-street Fever Hospital, and Steevens' Hospital, the deaths registered afford an annual ratio of 52 per 1,000; in No. 2, South City District (High-street), the ratio was 29 per 1,000; in No. 3, South City District (Peter-street), which includes the Coombe Lying-in Hospital, and the Meath and Adelaide Hospitals, it was 25 per 1,000; and in No. 4, South City District (Grand Canal-street), in which Sir Patrick Dun's and St. Vincent's Hospitals are situated, it was 20 per 1,000.

At the Observatory of the Ordnance Survey Office, Phoenix Park, the mean height of the barometer during the week was 30.227 inches. The highest daily mean reading (30.710) occurred on Sunday and the lowest (30.009) on Tuesday. The temperature was highest on Saturday, when the thermometer registered 54.5°, and was lowest on Sunday, the mercury having fallen to 38.1°. The mean temperature during the week was 47.1° (in the corresponding week of 1864 it was 33.4°); the lowest daily mean (42.0°) occurred on Sunday, and the highest (52.0°) on Wednesday. The mean of the dry bulb for the week was 47.1°; and of the wet bulb 44.4°. The mean humidity of the air during the week was .793—complete saturation being represented by 1.0. The rainfall during the week measured .010 of an inch.

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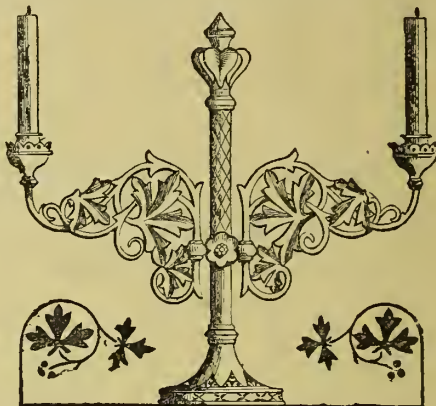
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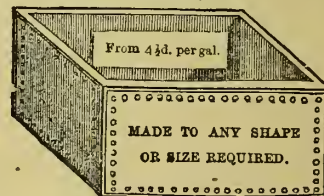
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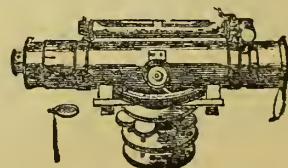
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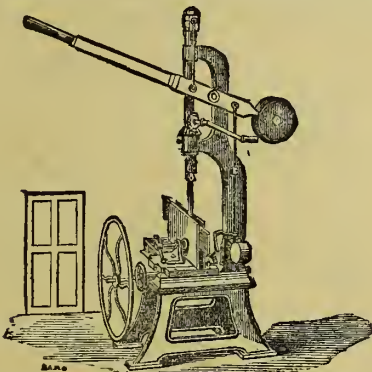
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 means of this Apparatus, a great number of the Residences,
 Farm Steadings, Out-offices, &c., of the Nobility and Gentry
 in Ireland, and will give every information as to price, size,
 &c., and list of places where the Works have been erected, on
 application at their Gas Apparatus Manufactory, CAPEL-ST.,
 where on used for lighting the Premises can be seen in opera-
 tion. Country Towns lighted at very small cost.

Gas Fitting and Ironmongery Establishment,

23, 34, 35, and 36, CAPEL-STREET,

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Gas Engineers, Iron Founders, Contractors, and Ironmongers.

IMPROVED HOT WATER APPARATUS,

For Heating Churches, Vineries, Hot houses, Melon-plots,
 &c., erected by

JOHN MAGUIRE AND SON,
 Manufacturing and Furnishing Ironmongers, and Heating
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FACTORY—DAWSON-LANE.

Plans and Estimates sent Free on Application.

TERRA COTTA and Fine STONEWARE

POTTERY, warranted to stand Frost.

JOHN M. BLASHFIELD, STAMFORD POTTERY, STAM-
 FORD, LINCOLNSHIRE, has greatly improved and economised
 the manufacture of TERRA COTTA and Fine STONE-
 WARE for ARCHITECTURAL PURPOSES. He is able to
 make it of various new colours, so as to harmonize with
 Marble, Portland, and other Stones, and equal in hardness to
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A Medal at the International Exhibition was awarded, in
 Class 10, Section C, Architectural Objects, for "Perfection in
 manufacture and beauty of form." A Medal was also awarded
 for "Terra Cotta."

Moulded Bricks, String Courses, Copings, Cills, Tracery,
 Balusters, Capitals, Crosses, Terminals, Vases, Statues, Brack-
 ets, Consoles, Garden Edging, Guttering, six, nine, and twelve
 inch Paving Tiles, &c., &c.

Also Plain and Mosaic Pavements for Halls, Churches, Con-
 servatories, &c., in all colours

Specimens of the above Ware are to be seen at the Dublin
 Exhibition, Class E.

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WINDOW GLASS, of superior manufacture, CRYSTAL,
 STAINED, ORNAMENTAL, CROWN SHEET, and PLATE.

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TIMBER, SLATE, TILE, AND STONE YARD,

70, SIR JOHN ROGERSON'S QUAY.

THOMAS HENRY CARROLL has in
 stock the following goods, which he offers to the trade
 on most favourable terms, viz:—

CROWN MEKEL TIMBER.
 CROWN DANZIC.
 RED AND YELLOW PINE.
 SPRUCE AND PINK DEALS.
 SEASONED RED AND WHITE
 FLOORING.
 BEST BANGOR SLATES.
 SLATES, SLABS.
 SLATE RIDGE TILE.
 KILLALOE SLATES.

SLATE CISTERNS made to order.

BRICKS, Fronting and Fire.

TILES, Ornamental and Ridged.

CHIMNEY CANS in variety

FLOORING TILES, English and

Scotch.

CAEN, Portland, Scotch, and

Bath Stone, in Block.

STONE FLAGGING, &c., &c.

R. H. MONSELL, Manager.

STEAM BOILERS, TANKS, ETC.

WALPOLE, WEBB, AND BEWLEY, IRON SHIP
 BUILDERS, DUBLIN, having extended their Premises, are
 now prepared to construct all classes of LAND and MARINE
 BOILERS, WROUGHT-IRON TANKS, GIRDERS, &c., and
 to execute repairs on same.

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PANY OF IRELAND

is one of the only two IRISH ASSURANCE COMPANIES. It offers

to the Irish Public the following advantages:—

The Head Offices are in Dublin.

The Directors and, with few exceptions, the Shareholders,

reside in Ireland.

The names of many of the first Merchants in Ireland are

included in the list of Directors and Shareholders.

The Company has been in existence for upwards of forty

years.

The Company offers every facility for the transaction of
 almost all kinds of Life and Fire Assurance—rates moderate,
 Copies of the large Prospectus, with Tables of Rates and every
 information, may be had on application to the Head Office of
 the Company, 9, College-green, Dublin, or any of the Com-
 panies' Agencies.

W. J. HANCOCK, Secretary.

Dublin: Printed and Published by and for the Proprietor,
 PETER ROE, at the Office, 42, Mabbot-street. May be
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The Dublin Builder.

ILLUSTRATED RECORD OF ART, SCIENCE, INDUSTRY, & MANUFACTURE.

No. 146.

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JANUARY 15, 1866.

1st & 15th
OF EACH MONTH.

VOL. VIII.

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DESIGN FOR A CHURCH.
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Contracts.

NOTICE TO BUILDERS.

ECCLESIASTICAL COMMISSIONERS
FOR IRELAND, on or before the 15th day of January, 1866,
will receive Proposals for
EXTENSIVE WORKS TO BE EXECUTED AT THE CHURCH OF

CASTLECOMER Co. Kilkenny.
According to the Plans and Specification, to be seen in the
hands of the resident Minister of the Parish.
The lowest Proposal will not necessarily be accepted.
Each Proposal to be forwarded sealed, prepaid, and ad-
dressed thus:—
"Proposal for Works at the Church of Castlecomer."
"The Ecclesiastical Commissioners for Ireland, Dublin."

BELFAST WATER-WORKS. CONTRACT FOR NEW WORKS.

PERSONS desirous of Proposing for the
several Works required to be done in forming and com-
pleting the Belfast Water-works may see the Plans and Specifi-
cation relating thereto at the Office of Mr. BATEMAN, 16,
Great George's-street, Westminster; or at the Office of Mr.
LANTON, Upper Queen-street, Belfast, on or after the 8th of
December instant.

The following Works are intended to be contracted for,
viz.:—

CONTRACT NO. 1.

Consisting of a New Service Reservoir, near Belfast, and the
Laying of a Service Pipe between the intended and pre-
sent Town Basin.

CONTRACT NO. 2.

A line of Close Conduit, between the New Service Reservoir
and the proposed Reservoirs on the Woodburns, being
about 9½ statute miles long, including two Tunnels, to-
gether of about 900 yards long.

CONTRACT NO. 3.

Three Reservoirs on the South and North Woodburns, near
Carrickfergus, together with a Flood Water-course, be-
tween two of the said Reservoirs.

All parties Tendering will be supplied with a printed Copy
of the Quantities and Specifications of each Contract, together
with lithographed Plans and Sections of the Conduit, Tunnels,
and Reservoirs, on depositing a sum of Five Guineas with the
Secretary to the Water Commissioners, which sum will be re-
turned to all the unsuccessful competitors on their returning
these documents to the Commissioners' Secretary.

Sealed Tenders to be forwarded, under cover, to the Sec-
retary of the Water Commissioners, Belfast, on or before the
17th January next.

The lowest or any Tender not necessarily accepted.

By Order,

JAMES N. McNEILL,

Secretary to the Belfast Water Commissioners.
Belfast, 1st December, 1865.

WAR DEPARTMENT CONTRACTS.

NOTICE TO BUILDERS.

Office of Commanding Royal Engineer in Ireland,
Dublin Castle, 2nd January, 1866.

TENDERS are required from Persons de-
sirous of entering into Contracts (from the 15th February,
1866, to 31st March, 1867, inclusive), for the performance of
such Artificers' Work as may be required at the under-
mentioned Stations, viz.:

DUBLIN DISTRICT,
(As per Schedule B.)
CASTLEBAR BARRACKS.
WESTPORT BARRACKS.

Persons desirous of Tendering may obtain every information
up to Wednesday, the 17th January, 1866, inclusive, on ap-
plication at the District Royal Engineer's Office, Dublin, or to
the Barrack Master at Castlebar; and printed Schedules of the
Prices, with the Terms of Contract and Letter of Tender, may
be obtained upon making a deposit of Ten Shillings for the
same, which deposit will be repaid if the Schedules are re-
turned unaltered, within two months from the date of issue.

The Letters of Tender to be sealed, and transmitted under
cover to "The Director of Contracts, War Office, Pall Mall
London, S.W.," so as to be received on or before Tuesday, the
23rd January, 1866, and to be marked on the outside, "Tender
for work at" as the case may be.

BOARD OF PUBLIC WORKS.

NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be
received up to the hour of 12 o'clock, noon, on the 29th of
JANUARY, 1866, for BUILDING

NEW CENTRAL POLICE COURTS, in
the Vicinity of the FOUR COURTS, Dublin, according
to Plans and Specification to be seen at this Office.

Each Proposal should be for a lump sum, and must be ac-
companied by a separate Detailed Estimate giving Quantities
and Prices, and be endorsed "Tender for New Central Police
Courts."

Both Tender and detailed Estimate should bear the name
and address of the Proposer on the back.

Printed forms for Tenders can be had at this Office.

N.B.—Persons tendering should send in testimonials as to
character and competency, unless previously known to the
Board.

By Order of the Board,

EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 29th December, 1865.

* If this be not attended to, the Board cannot return de-
tailed quantities to the unsuccessful parties.

SHEEPHOUSE LIME STONE QUARRIES, DROGHEDA.

FOR Samples of the above Stone, the
Proprietors direct the attention of **ARCHITECTS** and
BUILDERS to the new Union Bank, College Green, Dublin,
the Lime Stone Dressings of which were prepared and fur-
nished exclusively from this Establishment.

For Prices, &c., apply to

A. & N. HAMMOND,

Sheephouse Quarries, DROGHEDA.

AUCTION OF WOOD GOODS.

JOHN MARTIN AND SON will SELL BY

AUCTION, on THURSDAY, the 25th JANUARY,
1866, at their Timber Stores, NORTH WALL, a large and
varied assortment of Baltic and North American Timber and
Deals, consisting of

15,500 Pieces Bright Spruce Deals, *now landing*, ex "Lynam
Cann," from St. John's.

13,470 " " " *now landing*, ex "Humber," from
St. John's.

8,320 " Lower Port Deals.

7,400 " Quebec Deals, first and second quality.

450 " Red Pine.

320 " Yellow Pine.

410 " Crown and First Middling Memel Timber.

240 " Sandswall.

110 " St. John Birch (*if not previously disposed of*).

10 Tons Lathwood.

All arranged in Lots to suit Purchasers.

Sale to commence at One o'clock.

JAFFEAT BARCROFT, Broker and Measurer.

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A New Work,

MODERN DOMESTIC ARCHITECTURE.

Price, 5s. each part, containing Four Views, Plans, and
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presented to Subscribers. Non-Subscribers £2 2s. Designed
and Drawn by F. ROGERS, Architect.

ATCHLEY and CO., 106, GT. RUSSELL-STREET, W.C.
NEW LIST OF BOOKS SENT FREE TO ORDER BY POST.

THE PRACTICAL GASFITTERS' GUIDE (with Diagrams), 13 Stamps, post free.

GUIDE FOR FIXING HOT WATER APPARATUS AND WARMING, &c.; 2s. 6d.

BIRMINGHAM AND SHEFFIELD PRICE LIST OF BUILDERS' IRONMONGERY; 2s. 6d.

IRON AND HARDWARE DIRECTORY OF MANUFACTURES; 1s., or 13 stamps.

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TAYLOR PRIZES FOR THE PROMOTION OF THE FINE ARTS IN IRELAND.

The following Prizes, open to Art-Students of Irish birth,
or attending a School of Art in Ireland, are offered for the
year 1866:—

1. For the best composition of Figures in Outline,
size not less than 36 x 28 £10

[The subject to be selected by the student.]

2. For the best finished Drawing from the Nude
Figure, in Chalk, same size. Subject, "Venus
Rising from the Ocean," or "Endymion sleeping" .. £10

3. For the best study from Nature, in Oils, size 24 x
20 (Landscape, comprising wood and water) .. £10

4. For the best study from Nature, in Water Colours,
same size (similar subject) £10

5. For the best Model, in Clay, from Life, £6

6. For the best Model, in Clay (Subject, Sleep, or
Repose) £4

To be increased or lowered in amount, or wholly withheld,
according to the merit of the works.

All works must be delivered before Two o'clock on Saturday,
10th November, 1866, at the house of the Royal Dublin So-
ciety, Kildare-street, Dublin, where the conditions and other
particulars may be ascertained.

On behalf of the Trustees,

WILLIAM EDWARD STEELE, M.D.,

Assistant Secretary, Royal Dublin Society.

January, 1866.

DUBLIN BUILDING ASSOCIATION (ESTABLISHED 1856)

TRUSTEES:

James Haughton, Esq., J.P. | Henry L. Fry, Esq.

Samuel Hudson, Esq.

Offices—12, EUSTACE STREET.

This Association has been in successful operation for seven
years. It is managed by a Board of Directors, all of whom
are interested in the Commerce of this City.

To investors it offers a safe and profitable opportunity, by
moderate Monthly Payments as Members.

To Borrowers, for building purposes, it affords a means of
acquiring House Property, either for residence or letting, on
the lowest possible scale of repayment.

Reports and full information can be had on application to
the Actuary,

JOHN EDMONDSON, 10, Dame-street.

WANTED, a good Plumber and Gas Fitter;
constant work will be given. Apply, by letter, to F. C.,
office of DUBLIN BUILDER.

BATH STONE OF BEST QUALITY. RANDELL AND SAUNDERS, QUARRYMEN AND STONE MERCHANTS, BATH.

LIST OF PRICES AT THE QUARRIES AND DEPOTS, ALSO COST FOR TRANSIT TO ANY PART OF
 THE UNITED KINGDOM, FURNISHED, ON APPLICATION TO
 BATH STONE OFFICE, CORSHAM, WILTS.

BATH STONE OF BEST QUALITY. PICTOR & SONS, Quarry Owners and Stone Merchants, Bath. Corsham Down, Box Ground, Farleigh Down, and Combe Down Stone.

List of Prices at the Quarries and Depots, also Cost of Transit to all parts of the Kingdom, forwarded on application to
 BATH FREESTONE WORKS, BOX, WILTS.

THOMAS HENSHAW & CO., WHOLESALE & RETAIL FURNISHING AND BUILDERS' IRONMONGERS, AND GENERAL HARDWARE MERCHANTS, 5, CHRIST CHURCH PLACE, AND 15 AND 16, KENNEDY'S-LANE,

BEG to call attention to their extensive, varied, and well-selected Stock of Ironmongery in all its different branches. It consists of Parlour, Drawing-room, and Bed-room Grates; Kitchen Ranges, Sash Weights; Iron Rim, Mortise, and Stock Locks; Hinges of all descriptions; Wrought and Cut Nails, O. G. Gutters, Down Pipes and Fittings, Metal Skylights, Ventilating Bricks; Cast-iron Chimney-pieces, with and without Grates; Rabbit Traps, Fox Traps, Galvanized Wire Netting, Sheet and Perforated Zinc, Sink Traps, Furnace Doors and Frames, Hot Air and Plain Stoves, Cast-steel Digging and Manure Forks, Slashing Hooks, Rakes, Spades, Shovels and Hoes.

Manufacturing and General Ironmongers and Tool Warehouse—81, MIDDLE ABBEY-STREET.
 Spade, Shovel, and Tool Works—GLONSKEAGH.

Agents for Perry's Patent Fire-proof Safes quality considered, they are the cheapest in the market. Builders are invited to inspect our Stock previous to purchasing, at

5, CHRIST CHURCH PLACE.

KITCHEN RANGES, with high pressure Boilers for Steaming or Bath purposes; Galvanized Iron Roofing, and Fencing Wire, best quality.

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THE LIVERPOOL AND LONDON FIRE AND LIFE INSURANCE COMPANY. ESTABLISHED 1836. Progress of the Company since 1850:—

Year	Fire Premiums	Life Premiums	Invested Funds
1851	£54,305	£27,157	£502,324
1856	222,279	72,781	821,061
1861	360,130	155,974	1,811,905
1863	522,120	143,940	1,566,434

Fire and Life Losses paid by the Company since its establishment to the end of 1863 } £2,940,457.

Life Insurances and Annuities on peculiar and very favourable Terms.

HAMILTON AND MAFFETT,
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IMPERIAL FIRE OFFICE, 1, Old Broad-street, and 16, Pall Mall, London. INSTITUTED A. D. 1803.

SUBSCRIBED AND INVESTED CAPITAL:
 ONE MILLION SIX HUNDRED THOUSAND POUNDS.
 The distinguishing characteristics of this Institution are—
 MODERATE RATES; UNDOUBTED SECURITY;
 PROMPT AND LIBERAL SETTLEMENT OF CLAIMS.

AGENT:

Dublin: Mr. PAUL ASKIN, 19, TALEBOT-STREET,
 From whom Prospectuses, Forms of Proposal, and every information respecting Fire and Life Assurance, may be obtained.

THE ROYAL EXCHANGE ASSURANCE. (Incorporated A.D. 1720, by Charter of George the First.) CHIEF OFFICE—Royal Exchange, London. CORBET & ARMSTRONG, AGENTS.

No. 5, COLLEGE-GREEN, DUBLIN.
 FIRE, LIFE, and MARINE ASSURANCES on liberal terms.
 LIFE ASSURANCES with or without participation in Profits.
 Divisions of Profit every Five Years.
 Any sum up to £15,000 insurable on the same Life.
 The cost of Policy Stamps and Medical Fees borne by the Corporation.

No extra charge for service in the Militia, Yeomanry, or volunteer Corps within the United Kingdom.

A liberal participation in Profits, with exemptions under Royal Charter from the liabilities of Partnership.

A rate of Bonus equal to the average returns of Mutual Societies, with the additional guarantee of a large invested Capital Stock.

The advantages of modern practice, with the security of an Office whose resources have been tested by the experience of NEARLY A CENTURY AND A-HALF.

FIRE ASSURANCES effected on every description of property at current rates.

FARMING STOCK assured generally at 5s. per cent. per annum.—The use of Steam Threshing Machines allowed without additional charge.

Tables of Rates, Scale of Bonus declared, and all other information, may be had on application to

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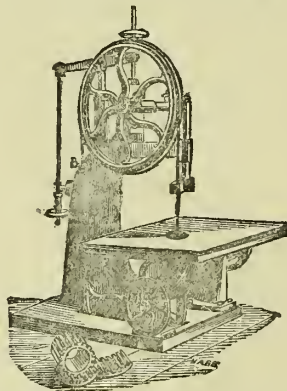
By whom Bank Stock, Government Stock, and Debentures, and all other public Securities, are daily bought, sold, and transferred.

The ONLY MEDAL given for **FIRST-CLASS MACHINERY** for WORKING WOOD.

See **JURORS' AWARD**,

INTERNATIONAL EXHIBITION, 1862, TO

POWIS, JAMES, & CO.,
SAW MILL ENGINEERS,
VICTORIA WORKS,
BLACKFRIARS ROAD, LONDON.



IMPROVED ENDLESS BAND SAWING MACHINE, with Powis, James, and Co.'s PATENT ADJUSTMENT FOR PREVENTION OF BREAKAGE TO SAWS. Over 300 References can be given in England and upon the Continent, comprising Her Majesty's Dock and leading Ship-Yards, Contractors, and Others.

POWIS, JAMES, & CO., invite all who are thinking of Putting Down a MOULDING or FLOOR BOARD PLANING MACHINE to see their NEW PATENT FOUR CUTTER MACHINE.

POWIS, JAMES, & CO., also call the attention of RAILWAY CONTRACTORS, and Others, to their NEW PATENT SLEEPER BORING MACHINE, suited for any Gauge, and to Bore either Vertically or at any angle.

POWIS, JAMES, & CO., also invite Inspection of their IMPROVED "GENERAL JOINER" for SAWING, GROOVING, RABBETING, TENON-CUTTING and BORING, together with PLANING, THICKENING, and MOULDING, most valuable to those who have not room to put down separate Machines for the different works named.

POWIS, JAMES, & CO., also invite all Carriage and Wagon Builders to see their NEW PATENT UNIVERSAL WHEEL-MAKING MACHINE for SAWING, BORING, TURNING, &c., WHEEL STOCKS, and making and finishing FOUR SPOKES at ONE TIME.

Plans and Contracts supplied for the erection of STEAM ENGINES, BOILERS, SHAFTING, and every description of SAW MILL and RAILWAY WAGON and CARRIAGE MACHINERY, upon application at Chief Office—26, WATLING-STREET, CITY.

PATENT CONCRETE STONE (Ransome's Patent),

WHICH FOR STRENGTH, DURABILITY, CHEAPNESS, SHARPNESS OF OUTLINE, BEAUTY OF APPEARANCE, and above all for its PERFECT RESEMBLANCE TO NATURAL STONE, stands unrivalled, and being MADE WITHOUT BURNING is free from all liability to shrinkage, or distortion. It surpasses all other material in its applicability to every description of ARCHITECTURAL EMBELLSHMENTS, and especially for CAPITALS, CORNICES, WINDOW DRESSINGS, Trusses, Balustrades, Gate Piers, Terminals, &c., as well as for Fountains, Vases, Jardinets, Statues, Flower Boxes, and Edgings for Garden Borders; also for Monuments, Tombs, and all kinds of Cemetery requirements.

Licenses granted for the Manufacture of this remarkable material, and Agents appointed in any part of the United Kingdom. References given to works already executed, and to several Engineers and Architects, of the highest eminence, by whom it has been applied; also to existing Licensees, whose works are in full operation in different parts of the Kingdom.

Specimens and Illustrations furnished upon application at the Offices of the PATENT CONCRETE STONE COMPANY LIMITED, 2, Queen Street Place, Southwark Bridge, E.C.



THE CONTINENTAL MARBLE COMPANY.

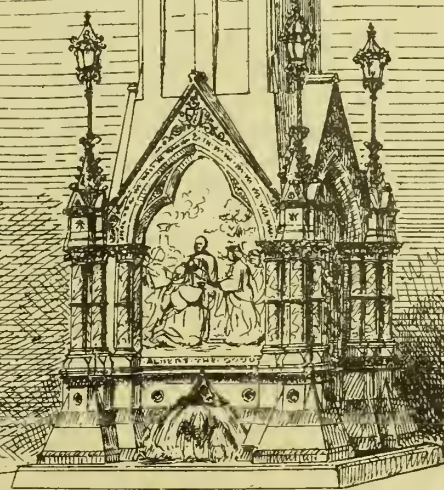
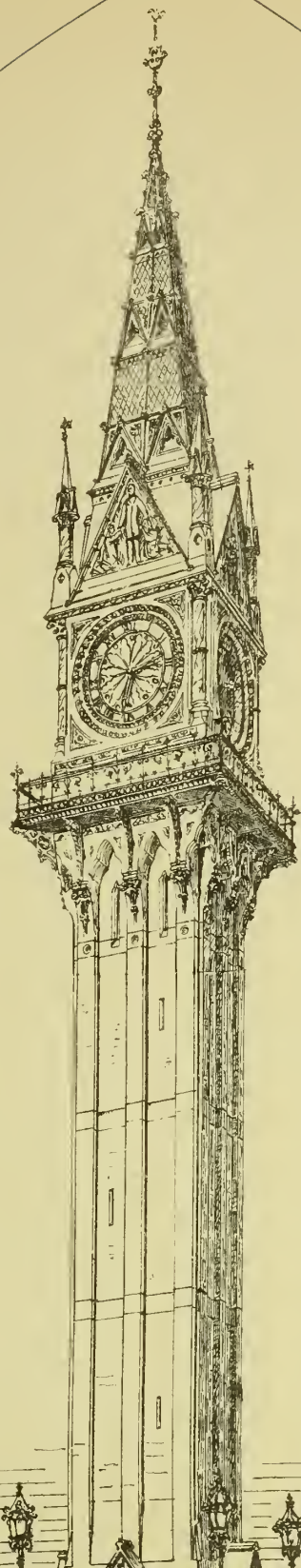
ARCHITECTS AND BUILDERS will find a considerable reduction in the price of MARBLE CHIMNEY PIECES, SLABS, &c.

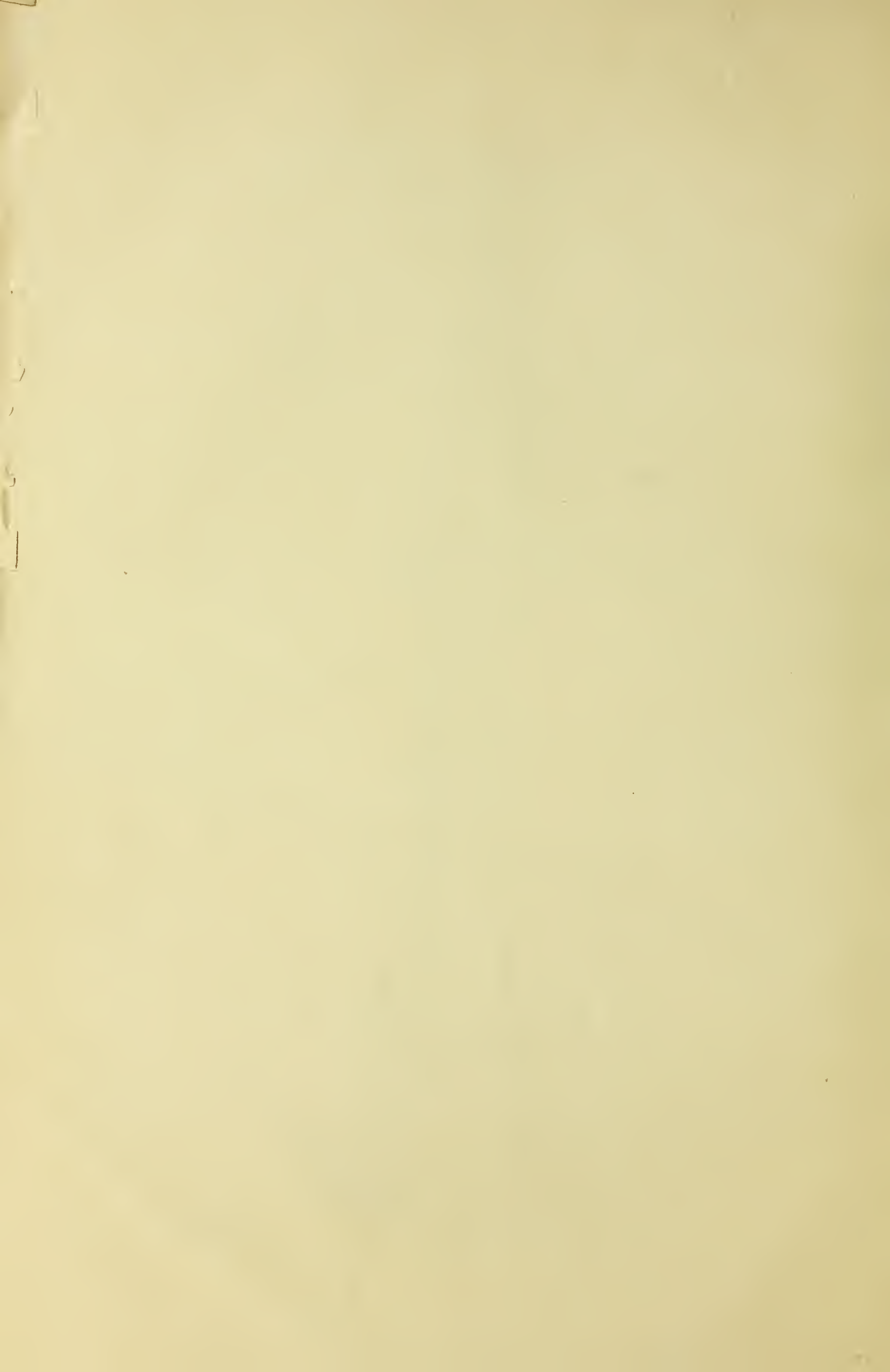
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No. 3, New Broad-street-court, New Broad-street, London.

MARBLE CHIMNEY PIECES FROM 16s. 6d. to £100.

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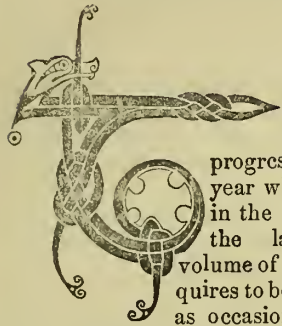




The Dublin Builder.

VOL. VIII.—No. 146.

A GLANCE AT SOME RECENT WORKS IN CORK.



HE hasty review of the progress of the past year which was made in the last number of the last completed volume of this journal requires to be supplemented, as occasion serves, with

more detailed notices of many important works then or previously only glanced at or scarcely referred to at all. On the present occasion some attention may well be devoted to some recent works in Cork City which may vie in importance with any which the metropolis has given us.

In *quantity* of work done, Belfast has no doubt outstripped all other Irish towns and cities—not even excepting Dublin itself—in the past year, but on the score of *quality*, Cork may well claim the precedence of its northern rival. As there is a difference wide as the poles between the characters of the northern and southern capitals, and so strong a difference in the characteristics of their respective inhabitants that they might well be imagined to be inhabitants of different countries, so the architecture of each may, without much stretch of imagination, be said to bear the distinctive impress of each place itself, the reflection of their respective inhabitants' idiosyncracies. Cork arrogates to itself no credit for doing *much*, but what it does, it seems with the spirit of the south to thank heaven it does not as other cities do, but in a manner eminently respectable, gentlemanly, and *genteel*. Not so the "Northern Athens," as some of its own orators ludicrously enough delight to style it. Bating a trifling leaven of what is excellent and respectable in a high degree, new Belfast wears a certain aspect of "shoddy." The very local building materials in use in both towns seem to lend themselves to the aid of our fanciful distinction. Cork uses stone and marbles of tender and lovely hues; Belfast spick and span new plaster, and brick "wrought about in divers colors."

Old Cork has not much of what is architecturally to edify, whatever it may have to amuse. There is an eccentricity, a large-heartedness, a kind of devil-may-care recklessness about the disposition of everything which seems a very embodiment of the spirit of a departed and departing generation of Corkagians. Patrick-street, for instance, is wide and spacious, but the civilized world perhaps might be challenged to show a street of houses so flung about as it were at random. They face north, south,—to every conceivable point of the compass as the humour seems to have seized their different builders. They elbow and jostle one another, they squint knowingly into bye-streets, and set to each other jocosely in quiet corners. To an imagina-

tive mind, now pantomimically imbued, they might suggest the idea of a mob of inebriated shops that had been disturbed over-night in the celebration of midnight orgies by some giant "bobby," and by him elbowed right and left to get a passage through their midst. The church of St. Mary's, Shandon, too, might be quoted as a type of past architectural eccentricity. The very tombs and grave-stones seems to have wandered out of the churchyard into the adjoining streets in a frolic, and to have forgotten, or scorned to go back again, giving the whole place and its surroundings an air of free-and-easy independence for anyone who can be touched by the humours of the place. Who and what kind of man may he have been who conceived that wonderful steeple which surmounts the tower that holds the far-famed Shandon bells, which tradition has invested with so lovely and touching a story? Who may he have been whose strong claim to immortality is the, at least original, if ugly church itself?*

Shandon steeple casts a long shadow—when it and the sun are so minded—from its telescopic pepper boxes on a more modern structure which is a curiosity of design in its way too—the butter market; a desperately Tuscan composition it is. It bears in its portico the name of its architect inscribed on perennial marble. Better would it have been for him, we would say, if on it, when his name was first there recorded, like as on the oath of my Uncle Toby in *Tristram Shandy*, the "recording angel dropped a tear and blotted it out for ever."

But Cork is no more to be distinguished for mere eccentricity in its architecture. It *may* be the result of accident, but still it is entitled to all the credit which is due to the mere fact of its doing some things far better than some of its neighbours. The two Faiths are both raising, of their piety, in the same city at the same time, structures which are each in their way better than their respective creeds are doing elsewhere; two noble churches of which any city might well be proud. The Church of SS. Peter and Paul claims precedence as being both more nearly completed and a more elaborate and costly structure than its Protestant neighbour—we will not say rival. In a previous volume of this Journal† we gave a little woodcut of this building and some descriptive particulars, so that anything we have now to say is more in the way of random criticism on its present aspect than of detailed description. Very fortunate have the architects been in the selection of the contrasted material of which the exterior is built, at least to-day before "the endearing young charms which we gaze on so fondly" have succumbed to the influences of wind and weather. There is a peculiarly rich purple hue in the red stone used commonly for facing in Cork, which we have never seen in any reddish building stone elsewhere, and which with the exquisitely delicate blue grey of the common limestone—rather a hard brightly "feathered" marble—of which the dress-

sings consist, forms a charming contrast of color. The principal feature of the western front, the great window, is boldly designed. It is neither distinctively plate tracery, nor is it exactly molded geometrical tracery, or line tracery as we may call it, and we venture to say this half and half combination is not *quite* happy in its results. On the exterior the spandrels, cusps, &c., are relieved with rich colored spars, but, seen from the interior unrelieved in a like degree, and with the strong contrast of daylight and tracery the stonework has a heavy effect, making this end the least effective feature of the interior. This building in arrangement may be accepted as an instance—and a very satisfactory model—of one type of church which the Catholicism of the present day may be said to have produced. A spacious nave with subordinate aisles and unbroken by transepts, terminated with an apsidal end, the distinction of the sanctuary being unmarked otherwise than by a distinctive treatment of the roof. The traditions more especially of English Gothic churches are being departed from in this respect, and almost universally, churches with the greatest possible amount of space for the solemnization of ceremonies, and a provision for an uninterrupted view of the ceremonial by as large a body of people as possible, have taken the place of the more distinctively separated nave-and-chancel church of an earlier time. SS. Peter and Paul has an open timber roof, and a groined polygonal apse, treated *a la Sainte Chapelle*, the tracery of the long windows admirably handled, and far more satisfactory in style than the western window. The roof of the apse is decorated well, but that of the side chapels still better. The roof of the nave it would be difficult to describe without the aid of a drawing. A reference to our illustration in the former volume, if at hand, will be found an assistance. It is, as it were, coved in two panels—into the lower and longer of which the heads of the clerestory window groin—so far up as the first purlin, from which springs a polygonal roof, the sides of which in section would probably be tangents to an equilateral arch. The arched principals are prolonged beyond their apices in straight lines—acting, we presume, as ties—and thus crossing each other saltierwise, to borrow an expression from heraldry. We are aware that our description is clumsy and unintelligible, but we wish we could convey an idea of the general effect of the roof, as being an arrangement somewhat peculiar, and, let us add in all proper diffidence, not wholly satisfactory; something which without being bad is scarcely desirable to be imitated. The groining over the clerestory windows into the straight section of the cove is not quite agreeable, and the peculiar arrangement of the principals gives a want of repose which the eye looks for in a roof. But perhaps we are hyper-critical. In lieu of principals the purlins of the aisle roofs bear upon molded arches, springing from the nave piers in a novel manner. A kind of corbal keystone in the crown of the arch furnishes the support to the purlin, and is another feature of detail which with a certain charm of boldness, we should not be disposed to recommend for imitation. It has somehow an unsteady look which does not satisfy, however really sufficient it may be in construction. An apparent failure in one of these arches has

* Parenthetically we may ask for the benefit of such section of our readers as may take an interest in Anglican church proprieties, who is to be made accountable here for the original device, perpetrated this past year, of gathering up all the ritualistic 'institutions,' such as pulpit, reading-desk, prayer-desk, and so forth, previously at large, and of penning them up altogether within the altar rails, the pulpit itself being the crowning trophy above and at the rear of everything else altar included, and symmetrically disposed in the middle of the eastern wall? This for whom it may concern.

† Vol. ii., page 310, ante.

given us on each side a feature which adds not a little to the effect looking eastward. One of the arches spanning the aisle on each side next the quasi-transepts (for the transepts are so little developed as not to contradict our general description) have been filled with a sub-arcade of two arches, which spring from a lovely shaft of Galway green marble, with an exquisitely sculptured cap, the whole making a "sweet bit," seen through the nave arches. And this brings us to the question of the sculpture of the capitals. We have not words sufficiently strong to express our satisfaction with these. We can only say that we do not think we ever saw any ancient examples much better, nor any modern ones so good. Not only these but the carving of the subjects in the spandrels of the arches of the apse, side chapels, and transepts is superb; of the altars, very elaborate, well-designed, and carried out with an exquisite delicacy of handling, we would desire to say a great deal if space permitted.

Since writing the above we have learned that to Messrs. Earley and Powell is due the credit of all the sculpture with the exception of one capital, and that the cost of the whole work up to the present has been about £22,000, a very undue amount of which, however, has been swallowed up beneath the ground in foundations. We noticed with regret, by the way, some traces of a settlement in the base of the future tower(?) at the west end of the north aisle. May we express a hope that it may not prove of so serious a nature as to prevent the piety and loving skill which have reared so noble a work from worthily bringing their labours to a close by raising the lofty tower, with dark-shadowed mysterious belfry-stage, and soft-toned tender-shadowed spire and airy pinnacle, and high over all the glittering emblazoned symbol "amid sailing birds and silent air."

But he who was to have gossiped with the reader of other works which Cork has done, has lingered in the precincts of SS. Peter and Paul, in reverent admiration, until a dark shadow has fallen on the pavement and the faint glimmer of soft green light stealing all day through the tops of the aisle windows has gone out altogether, and so must he too.

"BALD UNJOINTED CHAT."

SHAKESPEARE.

DR. MAPOTHER'S LATE LECTURE ON THE SANITARY STATE OF TOWNS IN IRELAND.

If anyone desires to stir up a good public controversy and get more than his share of notoriety through the medium of newspaper correspondence, he may evoke it to his heart's content, and in the most unsavoury of forms by inaugurating a crusade against the sanitary shortcomings of towns. The series of able and useful articles on the condition of the principal towns of Great Britain which appeared a year or two ago in the *London Builder*, it will be remembered, raised a series of local storms in corporate puddles which no other class of controversy could have excited. A canny northern peasant in our own country will admonish you, more forcibly than elegantly perhaps, in his native dialect, that if you *will* bring your nasal organ in contact with unsavoury matters you must "*just thole the stour*," i. e., endure the unpleasant smell. In fact sanitary reformers might condense their experience in the form of a trite aphorism, that "vexed dirt stinks." We

have been quite prepared for a storm of indignant and outraged virtue and cleanliness to follow Dr. Mapother's strictures on the sanitary state of Irish towns, and we are not surprised to learn that already indignant questioning of his facts are heard in some quarters. Dr. Mapother's paper, it should be borne in mind, was not an exhaustive one in respect of its only dealing with some towns which had happened to come in a cursory manner under his observation. A private individual and a busily engaged professional man could not be expected to visit every town in Ireland and devote the immense amount of time and patience gratuitously, and almost thanklessly, which the question would deserve. It is notorious too that statistics and published facts having a bearing on the subject are most difficult to be obtained with any degree of correctness. It is not, therefore, to be wondered at if some of the details in facts and figures in this paper to which we refer, may be found open to correction, and we are sure no one will be more ready to receive and record any duly warranted contradictions than Dr. Mapother himself. We noticed at first some errors in detail into which he had fallen, as for instance, with regard to the population and state of the large town of Newtownards in the county of Down. Dr. Jameson, a correspondent of the *Medical Press*, says:—

"Newtownards contains 10,000 inhabitants. It has adopted the Towns Improvement Act, and three of the commissioners are medical men. It is all lighted at night by public lamps. There are four scavengers constantly at work on it, under the inspection of a paid inspector of nuisances. It is six miles distant from Donaghadee, and more than three from Bangor."

In which facts he is correct, and Dr. Mapother wrong in his. But the figures of the registrar of deaths cannot be gainsaid, and in the absence of a vast amount of desired information, this is the best touchstone to which to bring the comparative healthiness of our towns. We want urgently a government commission and paid officers of ability to make a thorough sanitary survey, and give us a critical and intelligent report on the state of every town in Ireland. This alone, however, will not give us sanitary reform. We want this supplemented by the labours of unpaid sanitary reformers, who, armed with these unimpeachable data, will not cease to cry aloud and spare not, who by continual publishing of their shame to all the world, will stir up town commissioners, corporations, and local magnates to do their duty. Street boys have an aggravating but effective mode of torment for each other by the continued reiteration of some short and disagreeable fact, which however generally serves their ends better than more logical vituperation. Let us continue to cry "Dirty Sligo has a pestilential graveyard and dirty streets and drains, and lays its poor in deadly fevers, and grudges to spend its money on cleanliness!" "Carrick-on-Suir is a murderer of its people! Do not one in every thirty-four of them annually die? one in eleven of them smitten with fever!" "Kells drinks filthy poisonous water, graveyard-polluted, sewer-polluted, by-every-conceivable-filth-polluted. Belfast, rich thriving Belfast, you have a deadly black snake winding through your bosom, noisome graveyards, &c." and so on. These are the kind of cries to be kept up until we arouse apathetic local rulers to the slow murder to which they are parties.

DUBLIN BUILDING ASSOCIATION.

In some recent remarks on local building societies we omitted to refer to one modest one which it appears has been successfully in operation for seven years. The Dublin Building Association if not very extensive in its operations appears in a position to claim credit for having successfully effected some usefulness in its sphere of action. The balance sheet of its quiet transactions for the past year is before us and appears eminently satisfactory. The loans granted amount to £5,160 for the year, and of this sum only £20 was unissued at the date of the report. Under the head of "management expenses" we find the incredibly small sum of £56 17s. 2d., a fact which it might be well for other societies to digest at their leisure. Mr. John Edmonson, of Dame-street, has been recently appointed actuary, and Mr. Joseph Maguire is the surveyor to the association.

ST. ANDREW'S CHURCH.

Would it be intrusive to ask a question and offer a suggestion in this matter? On the occasion of a recent visit to this noble church we were much charmed by the effect of the interior, and by the excellence of the details—with very few exceptions—displayed throughout, but may we ask in the name of all common sense, what is being done there with that abomination of carpenter's Gothic eccentricity—the old pulpit of the Castle Chapel. We do not know if any of you, our readers, recollect this *chef-d'œuvre* of Francis Johnstone's daring; how the *stark* whereon it stands is composed of grouped columns which *in lieu of bases stand on a big open book*, which if intended to represent the Scriptures is a piece of symbolism in curiously questionable taste. But the capitals to these columns are the greatest treat of all; they consist simply of heads of the four Evangelists—and very ugly ones too—placed in pairs *dos-a-dos*, and having by way of a headdress to each individual saint, and at the same time serving as an abacus to this very original capital, a copy of his Gospel bound in quarto. Over this stands the utterly abominable box wherein at an enormous altitude an energetic divine may stand on the heads of the Evangelists and shake off the dust of his feet on them as a negative testimony, while his hands are engaged with an affirmative one above-board. Seriously, if it is a dearth of funds which gives us this *crying* monstrosity, would it not be better to spend a few pounds on a temporary erection which would not be so offensive and such an eyesore amid so much that is excellent?

THE METER QUESTION.

At the last County Clare Quarter Sessions, Mr. O'Dwyer, a grocer in Ennis, brought an action against the Ennis gas company for cutting off the supply of gas from his establishment. The case arose from Mr. O'Dwyer having measured his gas by the new government dry meter, and having discovered, according to the new meter, that he had been paying at the rate of 10 per cent. over and above what he was bound to do, or, in other words, that the company's meter registered a greater number of feet than the government one. In the defence it was urged by the manager of the gas company that from his experience the dry meter used by Mr. O'Dwyer was not as accurate a test as the wet meter used by the company, and that he believed that the meter next the service pipe would register more than that more remote. The case was withdrawn, and a private arrangement made between the parties, but scientifically the question of the accuracy of the dry or the wet meter remained undecided.

A VISIT TO THE PYRAMIDS OF GEEZEH.*

We have all heard, with more or less interest, of the Pyramids of Egypt. For my part, I greedily perused all matter relating to the land of the Pharaohs, and growing more and more interested, resolved, if possible, one day to visit Egypt. It was not, however, until the autumn of 1861 that I was enabled to square my business for a fifty days' absence, and engaging a berth in one of those floating palaces of the Oriental Company, I started alone for Southampton, from which after a steaming of twelve days, I arrived at Alexandria.

I may here mention, by way of information for my friends, that this route is particularly agreeable and quick, but has much more expense attending it than the well-known outlay to tourists of one pound per day. We had about eighty passengers, all, with exception of myself, bound for India or Australia, and we all, apparently, set out in the best of good humour. The living on board is somewhat more luxurious than wholesome. Coffee was served to each berth at seven, breakfast was announced at nine, lunch at one, dinner at four, tea at seven, and supper at nine; and all beverages were to be had during the day for the mere matter of calling.

Four days of very boisterous weather saw us clear of the Atlantic, but after turning into the Mediterranean all was serene. Six hours stay at Gibraltar for coaling and regulation of mails was sufficient to give all a hurried look at the fortifications, and four days more of steaming brought us to Malta, where a day was most agreeably spent amongst the Palaces of the Knights, the Church of St. John, and the extensive museum. Valetta and its climate partakes much of the regions of fancy, and the sail out of its harbour on a fine autumn morning is even now fresh on my memory. After three more days steaming we sighted Alexandria, but so low is the land that we were almost on it before distinctly seen, and reminded me much of the Scriptural phrase, "going down into Egypt."

Alexandria has many matters of great interest, but the town itself has not that peculiarity of Eastern character which strikes the new comer on entering Cairo; there are, however, the many mosques, Pompey's Pillar, Cleopatra's Needles, the Catacombs, the Roman Camp, and last, not least, the wondrous debris of the mighty city long gone, which the present rests on, as seen wherever an excavation occurs.

My chief object being the pyramids, I hastened on by rail of 140 miles to Cairo through flat but most luxuriant tillage land, intending to search out Alexandria on my return, and which I effectually did by a stop of a few days.

The pyramids of Egypt are said to be of all sizes and in all stages of dilapidation, and in number from two to three hundred, all being situated on the left bank of the Nile, just beyond the cultivated ground of a few miles width and on the edge of the desert. Of the whole about 70 exist in Lower Egypt, and the pyramids of Geezeh, to which I was bound, are amongst the finest and the nearest to Cairo. They take their name from the little village on the opposite side of the Nile, from which they are distant about 6 miles, and occupy the site of the northern end of the city of Memphis, while the pyramids Dashoor, Saccara, Abousier, and others, varying from 5 to 15 miles distance, occupied the western and the southern suburbs.

Memphis, as we are aware, was the royal city of Lower Egypt, while Thebes was that of Upper Egypt, and it stretched along the left bank of the Nile for about 15 miles. It was the abode of Joseph, of Scripture, about 1,700 years before Christ, and the place where the wonders were wrought by Moses 220 years afterwards, and it is fairly conjectured that the site of each group of pyramids and the multitude of tombs and mummy pits around them are but the cemeteries of this mighty city, just as we see such distributed round our capitals at the present day.

At about a mile from Cairo you come to the side of the Nile, where a rude boat conveys yourself, your dragoman, your mules, and your drivers to the opposite side, which is about half a mile over, to the village of Geezeh, after which your path lies along the headlands of some tillage ground, and then on the summit of a large dam which keeps back the water from many miles of low ground on its opposite side. The remarkable feature of the Nile, as we all know, is that it runs more than a thousand miles without receiving the smallest stream as a tributary, and its commencing to rise in the middle of June almost to a day, the utmost height at Cairo being 25 feet, but at Thebes it is 36 feet, and still more as you ascend. It was at its utmost height during my visit in September, and had to me all the appearance in colour of what is produced by about a tea-spoonful of yellow clay put into a tumbler of water, but when filtered it is well known to form the most grateful of drinks.

During the whole of the route from Cairo the

pyramids stand right before you, as seen in the view of which I took the sketch when at about two miles distant, and strange to say, they appeared scarce to change in feature until I got right beside them. They struck me as being smaller than I first imagined, owing, I suppose, to having nothing to compare them with but the boundless sky and desert seen in conjunction with them; but, of course like all other great sights, even this one remaining seventh wonder of the world disappoints the traveller at first look. I bave myself felt and heard remarks of disappointment even on seeing the Falls of Niagara, and nothing short of the sea coming out of the moon appeared to be expected by many; but after looking round for a day or two the vastness of its wonders come gradually to your mind, and you linger round such scenes, scarce able to depart.

The nine Pyramids of Geezeh, as shown by the map, stand on a platform of limestone rock, about 130 feet above the river, with the Libyan Desert touching some of their western sides, and then stretching away in great mounds of sand as far as the eye can reach. The whole of the surface of the rock is strewn with debris of limestone and granite masonry and pottery ware, intermingled with gravel and sand, and as you wind round and between the Pyramids you come upon great slabs of tombs, collections of large stones in form of walls, strange long cuts or sinkings in the rocks, thought to be pits where the mortar was made, and excavations from 10 to 30 feet square, and near 40 feet deep, polished round the sides and covered with hieroglyphics, all supposed to be receptacles for the dead, the larger ones being public, and the small for families.

What is called the "Great Pyramid," or the "Pyramid of Cheops," who reigned about 2000 years before Christ, is the chief feature of the scene, and although exceeding in dimensions and having more chambers than others, an outline of its construction will, I believe, serve for some hundreds. When perfect, it occupied a square of 764 feet, or 13a. 1r. 22p., statute measure, which is about the contents of our Merion-square, measuring round by its railings. It and others, however, have long served as the quarries of modern Egypt, as is plain to see in various walls at Cairo, and the harbour at Alexandria, and the removing of the coating has reduced the ground which it now occupies to about 11½ acres. Its former or finished height was 481 feet perpendicular, but by removal of the top (being the most vulnerable part after the casing) it has reduced the height 30 feet. It consists of about 225 courses of roughly squared blocks of limestone, apparently taken from that of the site, varying from 2½ to 4 feet high, put together in strongest manner, with the best of mortar, the stones being roughly squared, and for the most part all headers, and appeared, when a side view was obtained, to be from 6 to 10 ft. long, and from all information, by the many cuts in search of passages, &c., it is believed that the whole hearting is of similar masonry, forming about 85,000,000 cubic feet, when its chambers, passages, and some rock is deducted, which, at a calculation of 1s. per cubic foot when all completed (about the present probable worth of such work) would make the cost at the present day 4½ millions of our money. The contents of the chambers and passages are about 56,000 cube, or 1-1,500th part of the masonry; the cubic contents of a pyramid, as most may bring to mind, is found by multiplying one-third the area of the base by the perpendicular height. Upon this core of limestone was once a granite casing, brought from quarries at about eight miles distant on the opposite side of the Nile, consisting of bevelled stones, from 4 to 5 feet high, of which a couple of specimens still exist at the base of the great pyramid and about one-fourth way down from the top of the second pyramid. The whole of the surface was polished, and, according to the writings of Herodotus, who visited them about 420 years before the time of Christ, and of Pliny, who visited them about 75 years after the time of Christ, had writing in hieroglyphics, setting forth by whom built, and that it took 100,000 men 22 years to execute the work.

Of the many wonders connected with the construction of the pyramids, perhaps there are few so great as the conveying of those immense blocks of granite from the quarries at the opposite side of the river, and bringing them up on the site. All, however, left for our conjecture as to what way this was accomplished merely consists in about 200 feet long of causeway, 35 feet wide, built of great blocks of polished granite, and stretching out towards the river from the end of the rocky platform next the great pyramid, together with a long incline of road sunk in the rock at the southern end, next the third pyramid, over which the bridge hereafter to be referred to, formed a roadway on the upper level.

The ascent of the great pyramid is not to say very difficult, particularly when assisted by the Arab guides, who, for most part, insist on lifting you up, or the more agreeable way of setting a small stool to form a mid-way step, and leaving the rest to your own way of working. Owing to the incline the sensation is not that of great height, at same time there is the feeling

that if you slip you inevitably go the whole way down. The sublimity and interest of the view from the summit, assisted by the fine climate of Eg. 7t, is, perhaps, equal to anything in the world, and can scarce be described. It consists of the windings of the Nile, the site of Memphis, the Libyan Desert, the many little villages now islands during the inundation, and Cairo, with its many mosques, its citadel, and its great cemetery of miles in length.

I was much interested while climbing up by the discovery of quarry marks in the stones precisely similar to what are here called "polly holes," suiting the cleaving with what we call "plug and feather." I have never heard this remarkable little matter made mention of, and meeting so familiar a thing in so aged and remote a structure made me think at the moment that "there was nothing new under the sun." Entering the Great Pyramid is a more serious matter than ascending, owing to the unruly nature of the Arab guides and the confined air within; few, however, go to those wonders without at least visiting the King's Chamber. The entrance passage is up about 60 feet from the base, but easily reached owing to the immense debris collected hundreds of years back by the many searches for the entrance. It is in this pyramid, as in all the others known, near the centre of north side, descending with an angle of about 27 degrees, down which footings have been from time to time cut in later ages; the passage is about 4 by 3½ feet square, having its mouth formed of very large stones, and, like all the passages and chambers, except the lowest, which is sunk in the solid rock, is lined with immense blocks of granite completely polished and having their joints so close as scarcely to be perceived; and certainly if the lifting of such blocks to their place be a wonder of their day, the doing so without destroying the fineness of the edge adds to the wonder still more. After about 100 feet of descent you by some little difficulty get into the ascending passage, and after some 300 feet between small and large passages and portcullis, &c., you reach the King's Chamber, for which evidently it appears this pyramid was chiefly erected. It is 32 by 17 feet square and 19 feet high, having a plain empty sarcophagus of red granite close to the western end, same being a bare 2 inches less each way in dimensions than the passage by which you enter. The apartment is, as I before indicated, formed of large blocks of polished granite, having the ceiling composed of nine single stones of about 4 feet thick stretching across it, with four such other tiers in succession at about 3½ feet apart, and a penthouse ceiling over all, evidently to reduce the risk of damage from the weight of the work above. Those spaces were all broken into during the present century and take the name of "Wellington," "Nelson," "Campbell," and other chambers, and, strange to say, the sides and ceilings of them are all polished, but their floors are in the roughest possible state owing to the top of the great stones forming each ceiling never having been brought to an even surface on the upper side. The air shafts of about 6 by 8 inches, as shown in section, together with the three portcullis formed of polished granite 6 by 4 feet square and 16 inches thick working in grooves at the sides and disappearing in the masonry above, and that called the Great Gallery, 156 feet long, 7½ feet wide and 28 feet high, roofed by corbel stones of immense size, all indicate that this chamber was the chief one. It and the chamber beneath, called the "Queen's Chamber," had the mouth of the ascending passage leading to them closed in an ingenious way with a large block of stone at the bottom to evade discovery, and traces exist showing that even the 120 feet of ascending passage was filled up with solid masonry, respecting which it is conjectured that the rude shaft called the "well," of about 28 inch square (as marked in the section), was merely the way of escape for the masons after executing the work.

What is called the "Queen's Chamber" is 17 by 18 feet square and 14 feet high, it is built all round in every respect like the King's Chamber, and has its ceiling in penthouse form of large blocks of stone meeting in the centre; but the third and lowest chamber, like the only chamber which exists in most of the other pyramids, together with the passage leading to it, is wholly in the limestone rock polished throughout. It is 46 by 27 feet square, 11 feet high, and 105 feet below the base line of the exterior of the structure. Both this and the Queen's Chamber have never been known to contain anything, nor do hieroglyphics appear; and, strange to say, that this pyramid in question, although the largest known, was found devoid of writing of any kind, until, on breaking into one of the spaces over the King's Chamber, the name of the king was found figured in red paint, and must have been put there during the progress of the work. The mouth of the entrance passage to this pyramid, as also all others, were most ingeniously concealed by ceasing its foundation altogether when within about 30 feet of the external surface and then closing it with large stones. The passages were also kept at various levels, and some a trifle out of the

* Read at Meeting of the Royal Institute of the Architects of Ireland, by S. Symes, Fellow, December 21st, 1865.

centre, which deceived and caused wondrous trouble to both ancients and moderns who attempted an entrance.

It appeared to me that the largest stones in the construction of the Great Pyramid might be about 20 by 8 by 4 feet, weighing about fifty tons; they are in the internal work, and are something of the size which I afterwards saw in the walls of Jerusalem, but we all know that they are trifling to some of the obelisks removed from Egypt to various parts of the world; that brought to Paris, for instance, is about 8 feet square, and 77 feet long, weighing about 400 tons. In this manner the early Egyptians are said to have built for eternity, and that the pyramidal form was particularly adapted to stand against time; yet I think we may calculate that no form could be less artistic, nor could such a mass of material be put together with less beauty or effect.

The Second Pyramid is in external appearance precisely like the first or Great Pyramid, except that it has about one-fifth of its granite casing still remaining on its upper portion, which is polished, and has footings cut on one of the angles up which some daring travellers are assisted by the guides, and occupy the flat of about 8 feet square on the summit. It has, like hundreds of other pyramids, but one chamber yet known, and as usual deep in the solid rock, but it differs from most all others in having two places of entrance; these as usual so concealed that they baffled the ancients in finding them, and it was not until the ponderous work of forcing a passage (as shown in section), some 140 feet through its immense masonry that the true passage was come on. This pyramid was originally 708 feet square, or 11a. 1r. 38p., its height 454 feet, and its chamber 46 by 16 feet square, and 19 feet high. The rock was cut away at two of its sides full 20 feet, for the purpose of bringing the site to a level. A sarcophagus was found in it, partly sunk in the floor, but has of late been removed. The proportion of those pyramids one to the other may be imagined by comparing the drawings, which are all to a similar scale.

The Third Pyramid was originally 354 feet square, or 2a. 3r. 21p., having a height of 218 feet. If anything, its masonry is superior to the others, and some of its granite coating still remains round the base, part of which is built up full 30 feet perpendicular, to supply a want in the rock on two of its sides. It has somewhat ample passages, and two chambers strangely placed—much out of centre, in one of which was found a granite sarcophagus, covered with hieroglyphics, and having a sliding lid, like the common small boxes of our day; this, however, was lost at sea some thirty years back, when on its way to the British Museum, by the foundering of the vessel.

The six small pyramids of this group (as shown on plan) originally varied from 100 to 150 feet square, and from 70 to 100 feet high. Some have scarcely any masonry remaining, but all have their chambers sunk deep in the solid rock, and passages concealed in artful ways. Sarcophagi were known to exist in most. One of them (as shown in section) indicates all appearance of having been originally finished in immense steps of about 20 feet high, and several of such form and about similar size are known to exist in Upper Egypt, some being of brick, which has led to the supposition of their being the work of the Children of Israel when in bondage.

Amongst the many interesting and mysterious things round this group of pyramids is the sphinx. It is situated some three or four hundred yards from the pyramids and on much lower ground, but part greatly concealed by sand, and the face greatly mutilated. It is cut from the solid rock, with exception of a few wants made up in the back with masonry, and is 63 feet high and 142 feet long, the head being 102 feet in circumference. Between the paws was found an altar of sacrifice, and two considerable flights of steps are cut down the rock in front, which lead from it. It was thought that the inside might contain a chamber, and marks of modern boring may still be seen in search of it.

A bridge, which leads across a chasm, is also of strange formation; it consists of four stones, of about 25 feet long each, laid side by side across a cut made in the rock which was evidently a roadway of inclined nature, leading from the low ground up to the level on which this group of pyramids stands; it is, however, now so incumbered with sand that a full view of its supports is out of the question. The many interesting matters scattered about are almost innumerable, and would require the visitor to encamp for a week for even a partial examination of them all. The entrances to the various pyramids are particularly interesting, the arrangement of each stone likely to make a building man pause for an hour in wonder and conjecture.

Much has been talked of as to the use of the pyramids, and much time has been spent by the learned in endeavouring to find some regularity or proportion between their parts; but, from all I have heard, it appears that they have laboured without success, and, although the size and angles of one pyramid may give

hope for conclusions, they are defeated by another of slightly different proportion. The idea of form that comes nearest to regularity is that the four faces were intended to be equilateral triangles laid against each other and meeting at the apex. That they were intended for sepulchres for the dead can scarcely be doubted, when such remains are found in and around them, although, strange to say, a volume has been written as to their being granaries for corn in the time of Joseph, and another volume as to their being erected to keep off the sands of the desert from intruding on the tillage lands; but monuments for the dead they surely were. Nor can there be a doubt of their being monuments exhibiting the most empty pride and weakness of mankind, notwithstanding their being erected by a great and learned nation, having a colossal mind and a breadth of idea surpassing all that went before.

Respecting their construction, there are some matters in which they all nearly coincide, thus the position of all known have their sides corresponding with the cardinal points of the compass, the incline of their sides form an angle of about 52°, and the passages all descend at an angle of about 28°, nearly corresponding with that of the pole star. From this latter instance much hope was once entertained that the age of each Pyramid might be discovered by taking for granted that the passage did one day correspond with the direction of the pole star, and that from the procession of the equinoxes the now existing deviation would tell the age. The matter was, however, referred to Sir John Herschel, who after some calculation said, that he "was not led to suppose that the passage even corresponded with the pole star, and that the angle of 52°, which is so generally that of the side, had not any connection with astronomical facts." We may all clearly demonstrate, however, that the passages so thoroughly concealed and built up never could have been intended for any use after the remains were deposited, at same time the position of all the Pyramids being in the cardinal points may indicate something of the exterior having wherewithal to do with astronomy. Some English writer has, I know, drawn attention to the fact that the height of the Great Pyramid is to twice its base as the diameter of a circle is to its circumference; also some matters respecting its angles in opposition to Sir John Herschel, but I could not learn with what result.

Among the many opinions as to the age of the Pyramids it is generally agreed that the oldest are of about the time of Abraham, corresponding to 2,100 before Christ, which brings them to about 4,000 years from this period, but that nearly all were broken up by the Ethiopians who overran Egypt about 1,280 years after; and as Herodotus describes the interior about 400 years after this period, it bears out the statement of their being broken open before his time. About fifty of the Pyramids are proved to be *Royal* sepulchres, and allowing twenty years for the dynasty of each monarch, it would justify us in assigning the duration of pyramid building through a period of 1,000 years. It is generally supposed that the Pyramids all suffered more or less mutilation during the successive conquests of Egypt by Alexander the Great, the Romans, and the Turks; still, this one remaining seventh wonder of the world is as likely to be a wonder for as many more generations; for we may say with a citizen of ours, that "their age appears as a bit of eternity, and they now stand as monuments of pride waiting for another transformation of our planet."

THE UNHEALTHINESS OF IRISH TOWNS, AND THE WANT OF SANITARY LEGISLATION.

We resume Dr. Mapother's address on the above subject, from page 9, with the heads of the Act of Parliament which he would suggest. We also add the discussion which followed the reading of his paper.

AN ACT FOR PROMOTING THE PUBLIC HEALTH IN IRELAND.

1.—21 & 22 Vic., c. 98, s. 76.—The act to apply to all cities and towns and all unions in Ireland, the municipal councils, the towns commissioners, and the poor-law guardians to be the "local authority," and each local authority to report annually to Secretary for Ireland.

2.—17 & 18 Vic., c. 103, s. 1.—Interpretation of terms.

3.—21 & 22 Vic., c. 97, ss. 3, 4, & 5.—The Lord Lieutenant in Council may direct inquiries, and may appoint a medical officer, who shall report annually (or a sanitary inspector shall be appointed by the Poor-law Commissioners.)

4.—21 & 22 Vic., c. 98, ss. 79 & 80. The Board of Public Works to be the officers provided for the supervision of all works constructed in accordance with this Act.

5.—11 & 12 Vic., c. 63, s. 8.—Upon petition of a certain proportion of householders, or when the deaths in any district appear on the Registrar-General's

returns to be above a proportion of 1 in 43 of the population, the medical officer of the Privy Council to make local inquiry.

6.—11 & 12 Vic., c. 63, s. 10.—After inquiry in certain cases the Act shall be put in force by order of the Lord Lieutenant in Council.

7.—11 & 12 Vic., c. 63, s. 37.—Local authority shall appoint a surveyor and inspector of nuisances, and make bye-laws for the due performance of their duties.

8.—11 & 12 Vic., c. 63, s. 41, 43, & 45.—All sewers shall be vested in local authority, who may cause to be prepared a map exhibiting the sewerage of the district, and shall make, alter, or discontinue sewers.

9.—11 & 12 Vic., c. 63, s. 49.—No new house shall be erected without a drain, and local authority may, upon report of surveyor that any house is without a drain, cause one to be constructed, the expense to be recoverable from the owner.

10.—11 & 12 Vic., c. 63, s. 60.—Houses to be purified, and damp earth under floors to be replaced by suitable matter on certificate of officer of health or of two medical practitioners.

12.—10 & 11 Vic., c. 34, ss. 116, 117, & 118.—All houses in which lodgings are let for a less term than four weeks, and at rents not exceeding 3s. per week, shall be deemed lodging-houses, and shall be subject to the rules and regulations contained in the Dublin Improvement Act, 1864.

13.—18 & 19 Vic., c. 121, s. 5.—Local authority under this Act shall elect the dispensary committee of each district, as a Nuisances Removal and Diseases Prevention Committee.

14.—19 & 20 Vic., c. 103, s. 18.—The word "nuisances" under this Act shall include any premises in such a state from insufficiency of size or other circumstance, as to be a nuisance or injurious to health—any foul ditch, gutter, water course, privy, urinal, cesspool, drain, or ashpit, so foul as to be a nuisance or injurious to health, any animal so kept so as to be a nuisance injurious to health, any accumulation or deposit which is a nuisance or injurious to health.

15.—18 & 19 Vic., c. 121, s. 11.—Power of entry to local authority or their officers.

16.—18 & 19 Vic., c. 121, s. 12.—Justices may prohibit the continuance of nuisances.

17.—18 and 19 Vic., c. 121, s. 19.—Cost to be paid by persons on whom order is made, or owner, or occupier.

18.—On certificate of medical officer of health, or of two medical practitioners to the local authority, that any house is overcrowded, proceedings may be taken to abate the same.

19.—23 & 24 Vic., c. 17, s. 12.—Local authority may provide carriages for conveyance of infected persons.

20.—19 & 20 Vic., c. 103, s. 22 & 26.—Lord Lieutenant in Council empowered to issue orders for prevention of epidemic disease when prevalent, providing for the speedy interment of the dead, and house-to-house visitation.

21.—19 & 20 Vic., c. 103, s. 38.—Local authority may remove sick persons from lodging-houses to hospital.

22.—Local authority of towns of over 10,000 inhabitants, may erect and maintain lodging-houses, and borrow money for the purpose from the Public Works Loan Commissioners.

23.—18 & 19 Vic., c. 128, s. 3.—The Lord Lieutenant in Council shall appoint a duly qualified medical inspector to examine the state of existing burial grounds and the suitability of the sites of any which may be proposed, and that the same person may act as medical officer of the Privy Council or Sanitary Poor-law Inspector and Inspector of Burials.

24.—26 & 27 Vic., c. 40, s. 1.—The local authority shall be the authority for carrying out the provisions of the Bakehouses Regulation Act.

The Chairman (Sir Thomas Larcom) remarked that the paper read by Dr. Mapother displayed the most complete knowledge of the subject, and treated of so many most interesting questions, that the great difficulty of the meeting would be to know where to begin with them. He would be glad to hear any gentleman who wished to speak with reference to it.

Mr. James Haughton, J.P., said the subject was a most melancholy one to think of, but it was nevertheless one that they ought to be glad to have brought under their notice, more particularly by a gentleman of such ability and experience as Dr. Mapother. It was lamentable that so much ignorance prevailed amongst the community on the sanitary condition of towns—a subject it was so essential for them to know.

Dr. Davys, County Coroner, observed that the country at large should feel indebted to Dr. Mapother for the very valuable paper he had read that evening, which showed that in a large proportion of Ireland the population had been decimated from want of proper sanitary arrangements. He was acquainted with the subject and would speak with some authority with reference to it; but he thought there could be no more

practicable remedy proposed than that which had been suggested, which was to have a central body to send out medical officers to report on certain districts.

Mr. Hancock, J.P., Chairman of Lurgan Commissioners, said he had come ninety miles to hear the paper read by Dr. Mapother that night, and he had rarely listened to any one with deeper interest, and he entirely agreed with the previous speaker. With regard to the Towns Improvement Act, one of the chief obstacles to its being properly carried out might be attributed to some of its provisions, and the utter impossibility of borrowing money under it. It struck him that the course which had been suggested in the Loans Act of last year might be well adopted for sanitary purposes. They had granted money for the drainage of estates, and he believed the same would be done for the drainage of towns. One of the greatest obstructions in the way was the great variety of opinion which existed in regard to the best mode of draining. Such being the case, it could not be wondered at that the poorer classes should be reluctant to expend money on what they might be afterwards told was useless. He had great pleasure in approving of the suggestions of Dr. Mapother, which he thought were much to the point.

Mr. McEvoy said that there were two things to be done, which, he thought, were most important. The first was that the strongest public opinion on the importance of sanitary measures should be formed throughout the country, the ignorance of such being a great obstacle. Dr. Mapother had called attention to the necessity of a proper system of registration of deaths, and to the extraordinary fact that different systems of carrying out such existed in England and Scotland. Such a system if it were carried out would warn the public of any coming disease. The Registrar-General in Ireland should publish a report of the number of deaths in the eight principal towns of Ireland every month, as was the case in Scotland.

Sir Colman O'Loughlin, M.P., said that Dr. Mapother, in his paper, had endeavoured, as far as in his power, to get rid of the apathy which prevailed in the public mind. It was a subject which touched all parties. They all knew that every one was interested in the public health. The speaker referred to a proper system of drainage, and to the Utilization of Sewage Bill, in which he, having been on the Committee of the House of Commons, had had extended to Ireland. That act gave extensive powers to town commissioners, and, where there was no such body, to boards of guardians, to have proper sewers made, and for that purpose to borrow money on the security of their rates from the Exchequer Loan Commissioners. He was glad to learn that this act would not be inoperative in Ireland, inasmuch as applications had already come from several towns in Ireland for loans under the provisions of the act. Unfortunately there did exist a great apathy on the subject, and one of the best modes of removing that indifference was by reading papers and holding such discussions as these.

Professor Shaw said that the bodies in Ireland established for the education of the people should pay more attention to the subject. He did not think that the machinery of the poor-law department was at all adequate for the purpose of investigating the sewerage, water-supply, or sanitary management of towns, which was one of real national importance, yet had attracted no attention from Irish representatives or the executive.

The Rev. Professor Haughton agreed with all the propositions which Dr. Mapother had advanced, and remarked that it was a matter of the deepest regret that fever was always with us, whereas other countries had but now and then to combat it. He referred to the condition of the poor in Dublin, and hoped that the better system as regarded lodging-houses would be successful. There was one matter which he wished to mention, and which he thought was of more importance than all the rest, and that was good and wholesome food for the people. He thought the better condition of the labouring classes was much required. A man with a full stomach and a glass of good whiskey would not be afraid to enter a house in which there was fever, while a poorly-fed man might be afraid, and, in all likelihood, would take it.

Mr. Joseph Fisher and Mr. J. L. Conn, P.L.G. of Waterford addressed some practical remarks to the meeting, acknowledging that the subject was a most pressing one, which had nevertheless, received scarcely any attention from the Government. The latter gentleman noticed the case of a town in his neighbourhood which strongly exhibited the necessity of a central directing body; there was the lamentable need of sanitary improvement, yet none had been effected, as the proprietor of the town (which numbered some 800) had expressed himself content, and as the ratepayers had no leases, they were by this hint most effectually silenced, and breathed their malaria contentedly.

Some other speakers having expressed their approval of the measures which had been proposed, the Chairman invited Dr. Mapother to reply.

Dr. Mapother, in reply, said, he was much indebted

to the several speakers who had interested themselves so much in the topic he had submitted. Sir C. O'Loughlin had justly explained the value of the Sewage Utilization Bill, and he felt sure it was capable of doing infinite service if there was any central authority to urge the adoption of its provisions, and to see that sewers were made on a really effectual plan, as had sewers were worse than no sewers at all. He had endeavoured to show the still greater importance of a pure water-supply, and this was universally neglected in Irish towns: indeed, he believed the clauses of the Act of 1854, in this respect were very faulty, and he felt sure that a chemical analysis of the well-water of many Irish towns would disclose as startling facts as those which Mr. Simon published in one of his earlier Privy Council Reports. The Registrar-General's returns had shown that in some English districts the deaths yearly by diarrhoeal disease had been eighty times as numerous as in others, and the sanitary inquiry proved that "the excess of mortality had been in all the places coincident with one or other of two definite local circumstances—1st, the tainting of the atmosphere with the products of organic decomposition, especially of human excrement; or 2nd, the habitual drinking of impure water. In certain districts of England, sometimes by good fortune, sometimes by good local government, definite causes of disease must have been kept at or near their least conceivable activity; while in other districts the same causes must have been prevailing with as little check as if the community had been one of savages, to whom science had never taught the first and simplest lesson." To show the importance of such questions, he would mention that if the death-rate by diarrhoeal diseases had been only ten times the minimum rate, 20,000 lives would have been annually saved. He had omitted to mention the one other medical inquiry which had been granted for Ireland—namely, that into the mortality in the Clare unions by Drs. Hill and Hughes.

PROPOSED ESPLANADE AT KINGSTOWN.

THE question of forming an esplanade and embankment from the East Pier along the shore towards Bullock has given rise to much debate; the inhabitants generally, not seeing the necessity for such an expenditure as is proposed by the bill, decline to be taxed for a questionable improvement to the township. We give an abstract of the proceedings at the meeting on Monday last, which was called for the purpose of strenuously opposing the bill to be brought before the ensuing session of parliament. The chair was occupied by Mr. BARRETT, Chairman of the Town Commissioners.

The chairman observed that at present, with the outlays they had in contemplation for sewerage, for town hall, for court-house, and other works, these undertakings would impose upon them the necessity of paying additional rates; and he said that, having those improvements to pay for at present, with justice to the town, and with a view to the interests of the township, they could not sanction the present undertaking. If the expense of the proposed embankment were £6,000 or £7,000, he did not think they would have so many so warmly opposed to it; it was not only vague, but calculated to amount to a large sum. He had gone to a good deal of trouble to ascertain what would be the probable expense of the work contemplated, and after making a calculation of the cost of the embankment alone, he found that for three-eighths of a mile alone in the sea, it could not be done under £17,000 or £18,000. At some future time, when the works that he had alluded to, and which were of far more importance to the township, should be completed, he, for one, said if he could see his way as to the amount of expense to be incurred in the present proposed undertaking, he would be of a different opinion to what he was at present, and, together with a great number of the Commissioners, would support the bill.

Mr. Deunehy proposed the first resolution—"That the meeting had learned with much satisfaction the determination of the Town Commissioners, as expressed in their resolution of the 5th inst., to oppose the Kingstown Esplanade Bill as unnecessary and uncalled for, and they hereby pledge themselves to give their best support to the Commissioners in their opposition, and urge upon them the necessity of acting vigorously therein in order to effectually prostrate the attempt to impose an unjust tax on the ratepayers of the township." There were owners of property along the embankment whose property would be increased in value by the proposed undertaking, and, if they wished to do so, there was nothing easier for them than to get up a limited liability company for the purpose. The law pointed out many means by which they could improve their property by Act of Parliament, in place of asking the people of Kingstown to put their hands in their pockets to improve their property. He never, in the whole course of his life,

except recently, heard of a more outrageous proposition, and the only analogous one that had occurred recently was the proposition of the Ballast Board to tax Dublin to the extent of £60,000, without consulting any one but four or five members connected with the board. He ventured to assert that there was not in the British empire a township where there was a more magnificent means of enjoying the sea view, the beauties of the Bay of Dublin, and the grand prospect of the Wicklow mountains and the Killiney hills, than there was in Kingstown; and, as regarded the want of an esplanade for walking purposes, no such thing existed. They had other wants far more desirable to be attended to. The sanitary arrangements were at that moment a disgrace to any civilized community. A proper supply of water should be also afforded to the people, and other means resorted to that would render Kingstown not only one of the most beautiful, as it was, but also most healthful situations in the British empire for any man to reside in.

Mr. Dockrell, in seconding the resolution, said that the object for which they were assembled that day was to oppose the passing of the bill for an esplanade, and he thought they would be unanimous in their opposition and conservatism in preserving things as they were, and not in any way interfering with the pure breeze which was wafted over the sea. He contended that an esplanade was not required, as already they had sufficient promenades in Kingstown. They wanted flagging, sewerage, and other works which he hoped soon to see effected, far more urgently than the proposed improvement. They also wanted a Town Hall. Mr. Dockrell advised the meeting to offer their most strenuous opposition to the bill. When the Marine Hotel had been building, he was told that it would only cost £10,000, but now it had cost £52,000; and he thought the present proposition would turn out much in the same way.

Mr. Samuels, jun., regarded the contemplated undertaking as an improvement to Kingstown. He thought the bill gave large powers for making sewerage, which he agreed was a great want. It could not be said he had any private interest in having signed the petition, inasmuch as he believed it would be more an injury to his property than anything else. At Newtownsmith he had some small property, and there was an esplanade there which was private property; and in consequence of the healthiness of the locality, and the fine walk afforded by the esplanade, many invalids had been induced to go there specially for the benefit of their health.

The resolution was then put from the chair, and passed, with but one dissentient voice.

Mr. J. J. Dodd said—When he first heard of the improvement he thought it would be an advantage, and expressed himself favourably on it. There were many reasons, he thought, why the pier was not as great an attraction to every one as it should be. If it were lighted and sheltered, people would not be so much afraid to walk down there in the evenings, and he hoped that would be done before such an undertaking as was suggested was attempted. In the preamble of the bill it was stated that the esplanade would improve Kingstown communication, and be of advantage to the township; but he wanted to know how they would be able to prove that in Parliament, when already there was a road that would lead to Bullock by a shorter route than that proposed. He had been asked to propose a resolution, which was to the effect that, with a view of strengthening the Commissioners' opposition to the bill, a ratepayers' petition should be drawn up and lodged against it.

Mr. Madden, in seconding the motion, said that, when the bill first came before him he became quite alarmed about it, as, indeed, did nearly every other person in Kingstown who saw it. He since then saw the map of the course that was intended, and saw and heard the bill read, and his first impressions of alarm and surprise at such an emanation from any body of men unconnected with the town were fully verified and strengthened. With regard to the expense of the monstrous project, he contended that the bill was exceedingly evasive, and did not give the least idea of the amount. It had certainly been stated that something about £20,000 alone would be expended on the making of the road, but he was certain that it would cost a vastly considerable sum more. They had been told the promoters of the bill had high-sounding names, but so much the worse for Kingstown if they had, for then they would be sure not to stop at trifles.

Mr. H. Oldham proposed the next resolution—"That in order to give effect to the foregoing resolutions, a committee be appointed, consisting of—Captain Langrishe, Messrs. Evans, Nugent, Buckley, Walsh, Madden, Mackey, Parry, M'Entee, Gilligan, Oldham, Shields, Coall, M'Evoy, Daniel, Donnelly, Jackson, Dockrell, Dodd, Samuels, the Town Commissioners, *ex officio*, with power to add

to their numbers." He said it was a fallacy to make the contemplated improvement, or to say that it would in any way improve the communication to Kingstown. He wished to know why they should be taxed for a second set of Commissioners when they had one already. He said that the real promoters of the bill were the Railway Company and those who possessed a little property at the place where the embankment was suggested to be erected. He had been told by one of the architects that although they had an esplanade they had no carriage drive, but the answer he would give to that was that in other places where there was one it was never used, and they had in Kingstown an esplanade which was not inferior to any in the kingdom.

Mr. Walsh seconded the motion. He said that the bill was characterized by reprehensible features, and advised the ratepayers to give opposition to it, as it was a bad principle to allow any gentlemen who had no interest in Kingstown to walk in among them and make them spend their money according to their wishes.

Mr. Parry said that a subscription should be opened to defray the expenses of opposing the bill.

Mr. Samuels, sen., said, as he had been stated to be one of those who favoured the bill, he thought he might be pardoned for disclaiming all connexion with it. If the bill were a local one, he would be happy himself to subscribe towards it; but, considering the nature of the present one, he felt bound to oppose it.

Dr. Kirten moved that the promoters be requested to withdraw the bill.

Mr. Dennehy was then called to the second chair, and a vote of thanks to Mr. Barrett was passed, and the proceedings terminated.

LUNATIC ASYLUM, ENNISCORTHY.

From a contemporary, who informs us rather mistily that this building is situated, "*as the majority of these district asylums are situated, on the choicest spot in the vicinity of Enniscorthy*" (we did not know before there was more than one of them on the banks of the Slaney), we extract some particulars of this one of the most important and successful of these important works to which we referred in our review at the close of the year. On another occasion we promise to present an illustration of it to our readers.

"The asylum occupies an elevated position, and is set back about 250 yards from the Wexford-road, and lies parallel with that road and the River Slaney.

It is intended to lay out the ground in front in terraces and slopes, as has been done in most instances of the kind.

The total length of the building is 630 ft; which comprises a main or centre block, 124 ft. long, containing the physician's residence and offices, board-room, the chapel, the dining-hall, housekeeper's room, and other accommodation that may be common to all classes and sexes of the patients, of whom there will be about 280.

There are a male wing to the east, and a female wing to the west, each exceeding 232 ft., and containing, on each of three floors, a day-room or a dormitory for thirty-six patients, 34 ft. by 27 ft.; one for fifteen patients, 23 ft. by 34 ft.; and cells, 9 ft. by 7 ft., to correspond.

The convalescent patients are placed near the centre building, and the violent patients at the extreme end.

The ends of the wings may be described as T-shaped: the building extending to the rear forms the infirmary for each sex; that extending to the front, 60 ft., is appropriated to day rooms and residences, stretching over 248 ft. from front to rear.

To the rear of the central block, which projects 81 ft. is placed the kitchen building, with its usual laundry and other offices; also a recreation and dining hall, measuring 62 ft. by 29 ft. and about 36 ft. high to a waggon-headed ceiling. This room is well calculated to answer as a concert-hall, a purpose which at intervals it is likely to serve.

The kitchen is 30 ft. by 21 ft., and of good height. Close to the kitchens are a small farm-yard and offices, and over 100 ft. of low building occupied as workshops for tailors, shoemakers, carpenters, smiths, &c., and a coal-shed. A tall and well-formed chimney-shaft carries off the smoke for the kitchen, laundry, &c.

The heights of the ceilings are 12 ft., and there are three floors in height.

Fresh air will be supplied to the cells mainly from the corridors, in a manner moderated in extremes of temperature through openings a few feet overhead, filled with perforated zinc. The foul or vitiated air is conveyed from each cell through a flue in the internal wall to a trunk running along in the roof, through which it is conveyed to the central tower, induced thither by rarefaction; in addition the windows throughout will be made to open up and down,

the pivot sashes being, it is thought with reason, abandoned.

The heating will be altogether by means of fire-places, most of the cells being provided with them as well as the day-rooms, dormitories, &c.

Great facilities exist, and are taken advantage of, for the water supply. A tank at the top of each of five lofty towers will be kept constantly full, and will command any part of the building where water may be required.

These towers will form a landmark for miles around. A tower in each wing of 112 ft. altitude; in the centre building, two 100 ft. each, and one of 90 ft. These heights, coupled with the effect of the materials of which they and the buildings are composed, cannot fail to place the design high in the list of erections of a like kind in the kingdom. The decoration, composed of contrastive colours mainly, in the brick and stone, is of a bold kind. There is no timidity observable here; a little would have been salutary: the stone is of granite, and is quarried at Kiltely. It is more workable than *Dalkey* granite; it would, in fact, suit well for polished work in chimney-pieces, &c.

White Paisley bricks are used in panels, and form the chief dressings to the doors and windows, and are the chief vehicle of ornament, most of which is of a serrated character. The body of the work is composed of red bricks, made on the ground and in a field adjoining the asylum premises. The bricks are compressed and kiln-burnt. A large number has recently been used in the construction of a tunnel for the Dublin and Wexford Railway. It is expected that the works of the lunatic asylum will be completed and ready for occupation in April, 1866.

The total cost may be stated as about £40,000. The architects are Messrs. Farrell and Bell; and the contractor is Mr. Patrick Kerr. Mr. Bergin is clerk of the works."

DESIGN FOR A CHURCH.

As a supplementary illustration we give publicity to a rough sketch for a church designed, drawn, and lithographed by Mr. Hevey, a young gentleman late a pupil of Messrs. Boyd and Batt, Belfast, which is creditable to the author as presenting some points of originality, and promise of future ability in design. It affords us at all times more especial pleasure to give such aid and encouragement as there is within our ability to all efforts of mere youthful aspirants in architecture. Mr. Hevey is, we understand, at present in the office of Messrs. Pugin and Ashlin, Stephen's green, Dublin.

THE MANUFACTURE OF BRICK.

"RECENT Improvements in the manufacture of Brick" was the title of a paper read before the Chemico-Agricultural Society of Ulster, at Belfast, on the 5th instant, by Professor James Thomson. After giving explanations of the chemical composition and other characters of different kinds of clays, and of the change which they undergo in being burnt or raised to an incandescent heat, Professor Thomson explained the chief methods in use for working the clay and forming it into bricks, ready for the kiln. He then turned attention to the great loss of heat which occurs in the ordinary modes of burning bricks in common kilns. This great loss, he pointed out, arises in a two-fold way:—First—During the burning of the bricks, the air which has passed through the fuel, or among the heated bricks and the smoke and gaseous products of combustion generally, passes away from the kiln to waste at a very high temperature, even at a red heat, during a considerable part of the process. Secondly—when the bricks are raised to the high temperature required to burn them and render them permanently hard, the great store of heat which they contain is entirely thrown to waste while they are left to cool. He stated that he had noticed with much interest the very admirable principles of a new kind of kiln with perpetually revolving fire, which, invented and patented by F. Hoffmann, Berlin, and A. Licht, of Dantzig, is being introduced into Ireland by Mr. Moore, of this town, both for brick-burning and lime-burning.

In this new kiln a most remarkable economy of fuel is effected in a two-fold way; in fact, by saving the two-fold loss of heat already mentioned: for, first, it saves the heat of the gaseous products of combustion and unconsumed air passing through and away from the burning bricks, by applying this heat effectively in drying the new fresh bricks about to be burnt, and raising them up to an incandescent tem-

perature, so that only a very slight addition of heat directly from ignited fuel is required to complete their burning; and, secondly, it saves the heat of the cooling bricks, after their having been sufficiently fired, by applying it all in warming the air which goes forward to supply the fires; so that the fuel is burnt with air already at an incandescent temperature, instead of requiring, as usual, to heat the air for its own combustion.

Professor Thomson, with the aid of drawings, went on to explain the manner in which these principles are practically carried into effect, taking as an example the large kiln which Mr. Moore is constructing at his brick-works at Hayfield, in the neighbourhood of Belfast. The kiln is built in the form of a large arched passage like a railway tunnel, bending round in going forward on the ground till it closes with itself to form a great circular ring-chamber, within which the burning of the bricks is carried on. This ring-chamber may be of any convenient dimensions, 160 feet diameter being a suitable size. Round its circumference there are twenty-four entrance doorways, admitting of being closed with temporarily-built bricks and clay, so as to retain the heat and exclude all entrance of air by the doorways so built up. The great ring-chamber may now be conceived as consisting of 24 compartments or spaces, with one of these doorways to each. In the centre of the ring a high chimney is erected, and from each of the 24 compartments of the annular chamber an underground flue leads in to the chimney. There are then 24 of these flues, and each flue has a valve, by which its communication with the chimney can be cut off. Arrangements are made by which a partition like a damper or portcullis can be let down at pleasure, so as to cut off all communication between any of the 24 compartments of the ring kiln and the next one. Let us now suppose the working of the kiln to have been already fairly established, for, after being once kindled the fire is never extinguished, but the burning of new bricks and the removal of the finished produce, is carried on by a continuous and regular process from day to day. Two adjacent compartments have this day their entrance doors open, all the rest being perfectly closed. By the arrangement of the valves in the flues, and the large damper or portcullis, the air, which gets admittance alone by the two open doors, has to go round the whole circuit of the ring kiln in order to be drawn into the chimney. From one of the two open compartments men are taking out the finished and cooled bricks, and in the other one, they are building up newly formed unburnt bricks, which are not yet quite dry. The air entering by these two compartments passes first among bricks almost cold, and takes up their heat, and then goes forward to warmer bricks, and then to hotter, always carrying the heat of the cooling bricks forward with it till it reaches the part of the ring which is about diametrically opposite to the two open and cold compartments. At this place it gets final accession of heat from the burning of a very small quantity of coal dust, which is dropped in among the bricks from time to time by numerous small openings, furnished with air-tight moveable lids. Thus at this part of the kiln there is generated the full intensity of heat which is required for the burning of bricks. The hot air, including the products of combustion, which for brevity we may call smoke, though it is really perfectly gaseous and free from sooty particles, then passes forward to the brick, which, by its continuous current, are being heated, and it passes on among them from hot bricks to those which are less and less hot, heating them as it goes, and then passes on to those which are still damp, drying them as it goes; and then it passes to the chimney, in a state almost cold, and saturated with the moisture, in the form of steam or vapour, which it has taken from the damp bricks. On the following day to that on which the operations just described have been going on, the portcullis is shifted forward by the space of one compartment, and a corresponding change is made as to the flue, which is to communicate with the chimney, and as to the pair of compartments open for the admission of air and for the removal of finished cold bricks, and the building in of fresh damp bricks; and, the air including products of combustion at the end of its circuit in the annular chamber just before passing off to the chimney, now passes among the fresh bricks which were described as built on the yesterday of this new day. The place where the coal-dust for fuel is thrown in is also advanced round the circle by the stage of one compartment; and so now the whole process goes on just as it did yesterday. The fire thus makes a complete circuit of the annular chamber in twenty-four working days, the whole process being left dormant on Sundays merely by the closing of the apertures for the admission of the current of air. The same kind of kiln, with the same process of working, is applicable in the burning of lime; and, both for the brick burning and the lime burning, the saving of fuel, relatively to what is consumed by the ordinary methods, is such as to appear at first sight almost incredible.

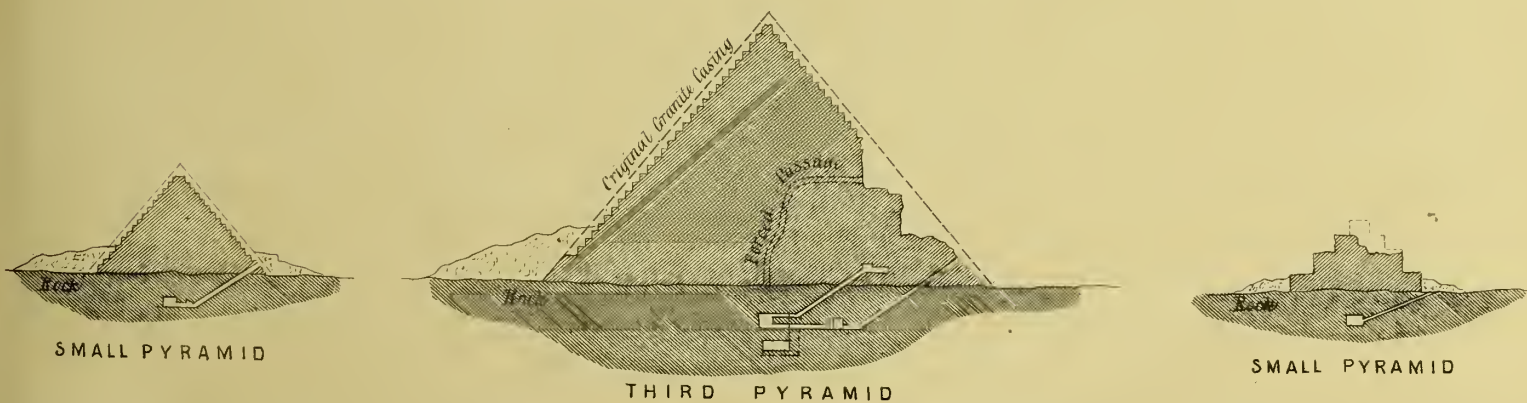
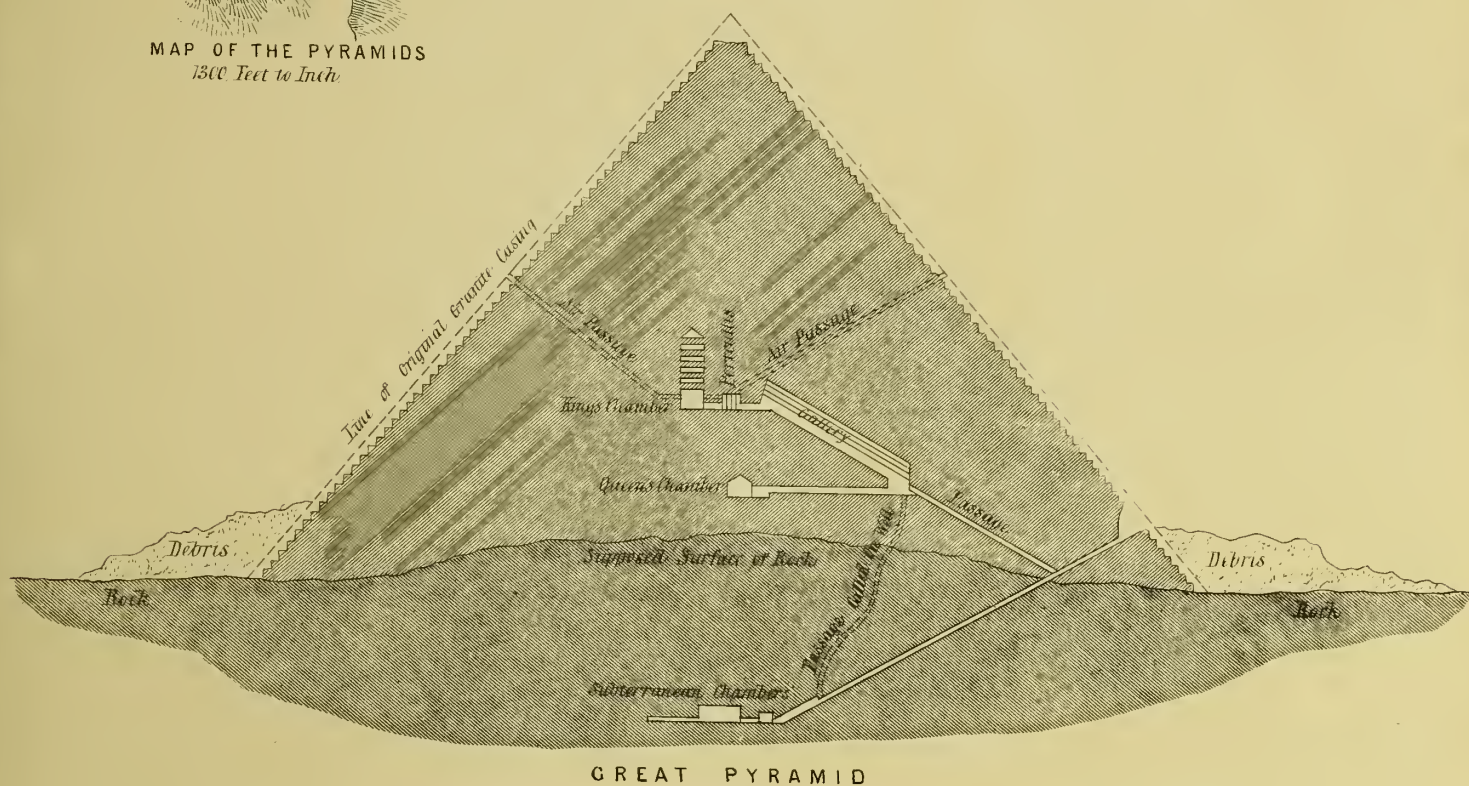
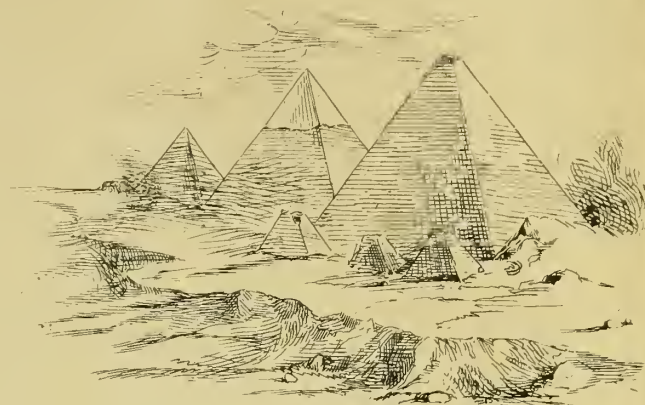
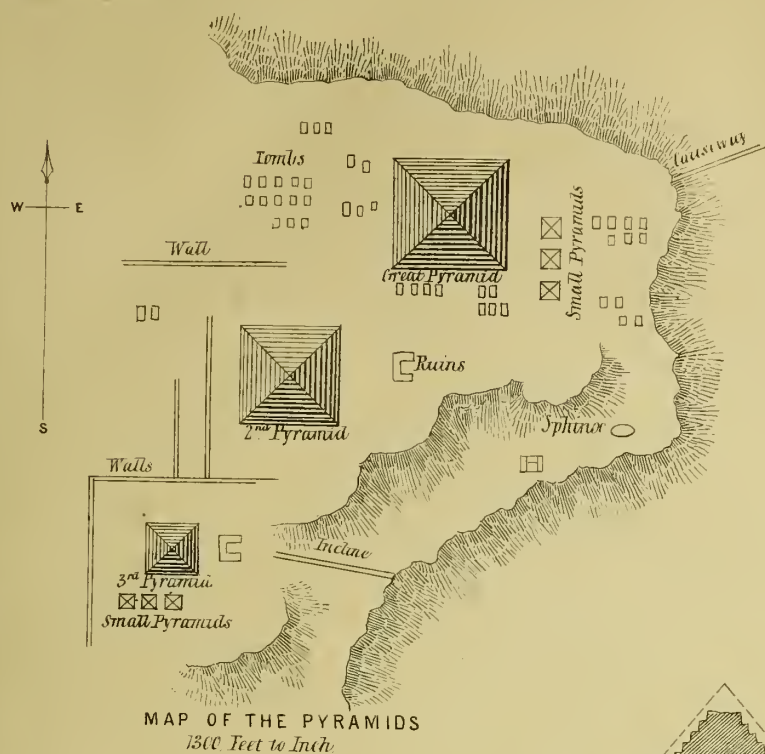
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DESIGN FOR A CHURCH

BY TIMOTHY HEVEY, BELFAST.

OCT 1865.



Section of Pyramids. Scale 150th to inch

PETROLEUM.

RATHER more than nine months ago we offered some remarks on the probable substitution of petroleum for coal in the production of steam. At that time some interesting experiments were going forward at Woolwich Dockyard, on behalf of the Admiralty, for the purpose of putting this question to a practical test. The operator was Mr. C. J. Richardson, a civil engineer, who had strenuously advocated the use of petroleum in the capacity of steam fuel, and who had invented a new description of furnace for the purpose of burning the petroleum in marine engines. From that time up to a very recent date those experiments have been continued, and we believe the affair has now passed into the hands of the Admiralty, with whom it therefore rests to bring this new invention into actual operation, supposing it to be of practical value. On this latter point, if we are correctly informed, there is much reason to hope that we shall shortly witness a very appreciable amount of efficiency added to the already extraordinary powers of our modern steam-engines. That petroleum will have a hard battle to fight to make its way against prejudice and misapprehension, there can be little doubt, and it has already encountered so vigorous an amount of opposition that the favourable results achieved some time ago under cognisance of the French and American Governments have failed to effect the positive introduction of petroleum—or any kindred oil—as a substitute for coal in connection with steam boilers. The French committee found that four pounds and a quarter of crude petroleum would raise as much steam in seventeen minutes as nine pounds and a third of coal would raise in thirty minutes. It was calculated that in sea-going steamers the adoption of this oil as fuel would save 250 per cent. in bulk, and that where fifty men were employed in tending a boiler heated with coal ten would be sufficient if the fuel were petroleum. It was proved that in the latter case the fire could be raised to a full blast in one minute and a half, and extinguished with like celerity. The American commissioners reported, as the result of their inquiries, that the steam generating power of petroleum was more than twice that of anthracite coal, and that the steam itself could be raised by the use of petroleum in less than half the time which was necessary when coal was consumed. To this evidence we may hope to see an encouraging addition when the facts of the Woolwich experiments become officially reported.

Of the importance of these investigations the non-professional reader may form an idea by reference to a statement made some time ago, by a very good engineering authority, to this effect, that were it possible to devise some method by which a good steam boiler now working up to 200 horse-power could be made to work up to 220, each pound of coal evaporating eight pounds of water instead of seven, the fortune of the inventor would be made. It is not the lot of every inventor to command a fortune, however deserving of such a reward; but Mr. Richardson claims to have done all that was asked for in the hypothesis just cited, and even much more. It is true that he lays aside the coal and employs another agent; but it is difficult to see why the result should be any the less valuable on this account, unless it should appear that the ultimate pecuniary cost is unduly increased—which we are assured is not the case. By the use of oil instead of coal in the Woolwich experiments, it would seem that an engine of 100 horse power becomes exalted into one of 140, and even beyond that, the gain, therefore, being 40 or 50 per cent. instead of 10. Three thousand pounds of water were evaporated at the speed of five hundred pounds every twenty minutes, every pound of oil serving to evaporate thirteen pounds of water. Not only petroleum, but all the hydro-carbons, are said to be utilized by the Woolwich apparatus. If these statements are substantially correct, very important consequences may be expected to follow. The boilers and furnaces of our steam-engines are thus liable to undergo extensive alterations, affecting both their bulk and weight, as well as the style of their construction. An increased rate of speed in the case of steam-ships may thus be calculated upon, with a power to keep the sea for a longer time without going in search of fuel. The various problems now under discussion in regard to naval armaments are materially affected by facts of this order. The first great naval power that adopts petroleum will have an immediate advantage over the fleets of all other nations, and the latter will be compelled to accept the invention, however determined at first to deny its value. Even the question of cost sinks into insignificance when we consider the imperative demands of war. Who shall say what value may attach to an extra knot per hour in the speed of a war ship in the crisis of a naval conflict? Equally important consequences may also connect themselves with the power of

readily generating steam when a vessel has been lying in harbour or at anchor, or with the ability to keep at sea a day longer than would be possible if the steam fuel were simply coal.

The danger of petroleum as an article in store on board of war ships has been urged with some pertinacity. But "petroleum" is a term of several significations, and as employed in the Woolwich experiments it has little or nothing to do with the volatile explosive liquid which is generally associated with the name. The amount of risk which may be properly thought to connect itself with the article as used at Woolwich is apparently far more than counterbalanced by its other good qualities; and it may be enough to know that as stored in tanks the petroleum fuel is not to be ignited even though a red hot cannon ball went through the mass. In fact, the furnace has to be "warmed," as it were, with a more inflammable compound, in order to prepare the way for the regular fuel. Among the advantages of petroleum as a steam generator, may be reckoned the very compact form which it gives to the furnace. It requires comparatively but a small fire-box, no iron grate bars, and no ash-pit. Two of its fire-boxes, with a water-space between them, can be constructed within the area necessary for one fire-box in a steamer worked by coal. When used as fuel petroleum requires very little air, and if this is properly regulated there is no waste. In these days when coal is becoming increasingly precious, it may be well to remember that high power in the propulsion of our steamers is obtained by a great waste of fuel, as well as damage to the furnace and boiler. Petroleum can be burned without any waste, and without any damage beyond a very moderate amount of wear and tear. It is conducted into the furnace under the most perfect control, and admits of a remarkable degree of cleanliness. In fact, it promises to accomplish for the steam-engine something like the advantages which gas has conferred upon us in the illumination of our cities. As gas has heated oil, so it would seem oil will beat coal. Petroleum, after all, is but coal in a liquid condition, just as gas presents it in the aeriform state; and the day is probably dawning upon us when science will look back with disdain on the clumsy expedient of shoveling lumps of coal into the furnace of an engine designed to generate steam.—*Standard*.

LEARNED SOCIETIES' MEETINGS.

THE ROYAL IRISH ACADEMY.—At a meeting held on Monday evening at the Academy House, Dawson-street: the Very Rev. DEAN GRAVES, President, in the chair, Dr. E. P. Wright read an interesting paper, the joint production of himself and Professor Huxley, of London, "On the discovery of some new forms of fossils of batrachian reptiles in the Irish coal measures of the Castlecomer tableland." These coal measures, he said, were arranged in the form of a deep basin resting upon a great series of limestone beds, some two or three thousand feet in thickness. The basin was estimated to be about 1,850 feet deep in the centre, and about a thousand feet below the present level of the sea. Scattered through these coal measures were numerous coal pits or collieries, and in these had been discovered within the past few months the following new genera of batrachian reptiles:—Urocordylus, Wandesfordii, so named after Mr. Wandesford, the lord of the soil where the discovery was made; Ophiderpeton Brownriggii, named after Mr. Brownrigg, who kindly rendered the authors of the paper all the assistance in his power, and gave them all the materials he himself had collected; Ichthyopteron Bradleyæ, named after Mrs. Bradley, the wife of the proprietor of the colliery on which the specimen was found; Keraterpeton Galvani, named after Mr. Galvan; Lepiderpeton Dobbisii, named after Mr. Dobbs, to whom the authors were under great obligations for his assistance; and Anthracosaurus. Of fish fossils there was one which was named Campylopleuron, and of insect fossils one to which they gave the name of Anthracarabæus. Till the discovery of these specimens of new genera, there were but 13 genera of batrachian reptiles known in the world, eight of which were furnished by the American coal measures, and five by those of Europe. Dr. Wright concluded by expressing his own and Professor Huxley's thanks to Mr. Brownrigg, Mr. Bradley, the directors of the Great Southern and Western Railway, and in particular to Mr. Dobbs, the agent of the mines, through whose great courtesy Dr. Wright was enabled to pay longer visits to the mines than he would have been able to do under other circumstances. The Earl of Enniskillen in moving that the paper be referred to the council for publication, characterized it as marking an era in the history of the coal measures of the world. He hoped sincerely that the council would publish the illustrations of the paper, for it was really one that must be illustrated. Although he knew the Academy did not possess so great means as the Royal Society of London, of which he had the honour to be a member, yet he hoped they

would stretch their purse-strings for this important purpose. The Rev. Professor Haughton, F.T.C.D., seconded the motion. He said he had the authority of Professor Huxley for stating that the Irish coal measures referred to had, within the past few months, furnished greater discoveries than all the European coal pits together, before. Mr. G. V. DuNoyer proposed to execute the illustrations gratis. Professor Jukes also addressed the Academy, and hoped an effort would be made for placing the valuable paper of Dr. Wright and Mr. Huxley in the hands of the members, with suitable illustrations. The Earl of Enniskillen said he had omitted to say that he hoped the great concentration of these fossils should be made in one of our national museums, he did not care which of them. The President, on putting the question, trusted the Council of the Academy would answer the expectations expressed, and that the paper would be published in a manner worthy of its great importance. The resolution passed unanimously. Dr. Waller said it was the wish of Mr. Brownrigg that the collection should be concentrated and presented to Trinity College. The following were admitted members of the Academy:—Rev. Thomas D. F. Barry, George Hanchell, M.D.; Edward S. O'Grady, Esq., A.B.; Daniel O'Sullivan, Esq., Joseph O'Kelly, Esq., M.A.; Henry Wilson, F.R.C.S.I.; and the Rev. Richard Wrightson, B.A.

BELFAST ARCHITECTURAL AND ENGINEERING ASSOCIATION.—The annual general meeting of the members of this association was held on the 5th inst., in the Library of the Museum, College-square. Conway Scott, Esq., C.E., occupied the chair. The annual report being read by the secretary, Mr. James Simpson, it was found that the association was never in a more prosperous position than at present, and likely to continue so, seeing that the numbers are considerably augmented, the increase of members during the past year being much greater than that of any previous year. The treasurer, Mr. James Wilson, having read his report, it was seen that there was a balance of cash on hands, which was also very satisfactory. The following gentlemen were elected as officers for the ensuing year:—James Thomson, Esq., A.M., A.I.C.E., president; Mr. Robert Young, vice-president; Mr. William Kelly, treasurer; and Mr. Clarke, secretary; William Workman, Esq.; L. N. Macassey, Esq., C.E.; Conway Scott, Esq., C.E.; and James F. McKinnon, Esq., C.E. (ex-president), members of committee. It was moved by Mr. Macassey that a committee be appointed to consider the advisability of forming a scientific library or reading-room in connection with the association. Mr. Wilson seconded the motion, which was subsequently put to the meeting. After an animated discussion, the proposition was carried by a large majority. The next meeting of the association will be held on Friday, the 19th inst., when Professor Thomson will deliver his presidential address.

The Ulster Chemico-Agricultural Society held a meeting on 5th inst., at Belfast. A paper on "The Manufacture of Brick," (an abstract of which we give in another column) was read by Professor Thomson.

The Royal Geological Society of Ireland met on Wednesday evening last. A paper by G. H. Kinnahan, Esq., entitled "Notes on the Foliation in the Gneiss and Schist of Iar-Connaught," was read by the secretary. Books received since last meeting were acknowledged.

At the monthly meeting of the Institution of Civil Engineers on Wednesday evening, Mr. Johnston read a paper descriptive of the recently-constructed works for the Rathmone Waterworks, and which have been satisfactorily carried out by him, at a cost to the township of only about £16,000. He exhibited a model of the reservoirs and specimens of improved cocks and joints, as supplied to the works. The water supply is taken from the Grand Canal into reservoirs situated about four miles from Dublin; it is said to be pure and good.

The following papers are announced for reading at the Scientific Meeting of the Royal Dublin Society to be held this evening:—Edmund W. Davy, M.B.—"Description and Exhibition of Schleber's New and Ingenious Apparatus for the Quick and Easy Estimation of Carbonic Acid under different Circumstances." Mr. Hoare—"On the Resources of the Sea Fisheries of Ireland."

The Distribution of Prizes to the Students of the Government School of Science, applied to Mining and the Arts, will take place on this evening, when an address will be delivered by Sir Robert Kane, F.R.S., M.R.I.A., Director, on "The Conversion of Coal Gas into Alcohols."

The Bishop of Oxford has reconsecrated the church of Peesemore, near Newbury.

THE CHEMISTRY OF NATURE.

(Continued from page 11.)

It may be easily proved by experiments that, in an open, unconfined space, like that which the earth's atmosphere occupies, currents of air can only be produced in four ways—1st, they may be produced by expanding a portion of such air by the introduction of heat into it, in which case the rarified air would expand, and in doing so produce currents diverging in every direction from the centre of such expansion; 2nd, currents of air may be produced by the contraction or condensation of a portion of air by depriving it of its heat, in which case the surrounding air would rush toward the centre of such contraction as currents of wind; 3rd, currents of wind may be produced by the generation of volumes of gas by the electricity first decomposing the aqueous vapour contained in the atmosphere, and then chemically combining with the separated oxygen and hydrogen to form those gases, as already described,—as these gases would occupy more than a hundred times more space than was required by the unchemically-combined electricity and aqueous vapour, they would spread out as currents of wind in every direction from their centres of formation; 4th, currents of wind may be produced by the consumption of these gases by combustion, when the surrounding air would rush in to fill the vacuum occasioned thereby. That currents of wind are produced by each and all of these causes I entertain no doubt whatever, but upon carefully considering and observing the action of wind in the air I feel certain that the general currents of wind, more particularly very strong winds, such as gales, hurricanes, &c., are produced by the rapid generation of large volumes of gas, as explained according to the third cause.

When the atmosphere is examined, especially during stormy weather, it is frequently found that adverse currents of wind are blowing at the same time, with different degrees of force, and at different altitudes in the same column of air. This has often been observed by persons on the tops of high mountains; while they have been in a calm atmosphere they have seen beneath their vivid flashes of lightning and heard heavy peals of thunder, hurricanes of wind, and torrents of rain falling on the earth: and, even in moderately calm weather, Mr. Glaisher and other aeronauts, while ascending in their balloons, have often met with adverse currents of wind blowing at the same time at different altitudes in the same column of atmosphere. It will be evident, upon reflection, that neither the adverse currents observed by Mr. Glaisher and other aeronauts, nor the thunder and other storms which have been observed to exist in the air below the tops of mountains, could have resulted from either the first or second causes of wind which I have alluded to, because if they resulted from air being expanded by heat or contracted by cold, during hot weather, when the temperature will sometimes vary 30° and even 40° between day and night, we should always have the strongest storms of wind, which is the very reverse of the fact; and under such circumstances any wind formed would move in one uniform body, to balance the equilibrium of the atmosphere, and not in such conflicting currents as are known to be in motion during stormy and sometimes even in moderately calm weather; but if we fall back upon the third cause of wind, for an explanation of storms and adverse currents, it can easily be supplied.

We will first refer to a thunderstorm for an explanation. When a thunderstorm is brewing, that part of the atmosphere in which the storm forms is known to be charged with an excess of the electric fluid. This fluid concentrates vapours into clouds, and attracts clouds, composed of aqueous, metallic, and other descriptions of vapour, towards each other. As these and the electric fluid mingle their component parts come into the proper condition to chemically change into oxygen and hydrogen gases. As these form they expand, driving everything away from them, in doing which the hydrogen gas combines with such inflammable vapours as sulphur, phosphorus, &c., and for these it is known to possess a strong affinity, and by this combination acquires the proper condition for spontaneous combustion, which then takes place; during which the two sorts of electricity, so recently combined with the newly-formed gases, unite, inflame, and disperse as lightning. The particles of oxygen and hydrogen, being freed from the electric fluid, chemically combine and form into drops of rain, which then descend upon the earth; and if the clouds contain sufficient quantities of metallic vapours for the purpose, such vapours are concentrated and fused together by the inflamed electricity, and descend upon the earth as thunderbolts. The surrounding air is then forced in to fill the vacuum produced by the combustion of the newly-formed gases, and by its concussion produces the peals of thunder which are heard in

the distance. After the electric fluid and aqueous and other vapours have expended themselves, the storm ceases and the air becomes clear.

A similar explanation to that I have given to account for thunder and lightning will also serve to explain the formation of meteors in the air, they being caused by the combustion of streams of compound inflammable gases in the atmosphere; the fire balls, &c., resulting from them being formed by the vapours from the gases collecting in mass by the attractive power of atmospheric electricity, and then fused and conglomerated by the heat liberated during the combustion which takes place; such phenomena always being attended by an explosive sound, like thunder, and similar to that produced by the combustion of a bladder of compound oxygen and hydrogen gases, but from meteors being generated in the higher regions of the air, where the sound is faint in proportion as the air is attenuated, it is not sufficiently powerful to affect our sense of hearing on the earth's surface. When large volumes of oxygen and hydrogen gases form in the atmosphere by the chemical union of the two sorts of electricity and decomposed aqueous vapours, and the formation of hydrogen gas takes place in the absence of such inflammable vapours as would, if present, combine with it and cause its spontaneous combustion, such volumes of newly-formed oxygen and hydrogen gases, by expanding to fill more than a hundred times the space that the ingredients of which they are composed previously occupied, they spread out in every direction from their centre of formation, and by driving the air around them with great force produce those currents of wind which form cyclones and tornadoes in the torrid zone and gales and hurricanes in the temperate and frigid zones.

Thunder and other storms, as just described, may be looked upon as convulsive efforts of nature to rid portions of the atmosphere of unusual accumulations of vapours, electricity, &c.; still the same explanation will hold good to account for the formation of those more moderate currents of wind called breezes. Keeping in mind the ingredients of which oxygen and hydrogen gases are formed, and supposing that over, say, the central county of England, Staffordshire, and up to half a mile high, the contents and conditions of the atmosphere are proper for the formation of those gases, it will follow as they form they will spread out in currents of wind in every direction from such centre of formation. We will now suppose that to the north, say over the county of Northumberlandshire, and from half a mile to one mile high, the contents of the atmosphere are in the proper condition for the formation of those gases, it will follow that they will spread out in every direction from such centre of formation. And supposing the same process is going on at the same time over the county of Norfolk, at from one mile to one and a half miles high—over Cambridgeshire, at from one and a half to two miles high—and over Hampshire, at from two to two and a half miles high—it will be evident that, from each of those five centres of formation, currents of wind will be blowing in stratas half a mile thick, and crossing each other in five adverse directions, exactly as they are found to be doing by Mr. Glaisher and other aeronauts. I have named the above counties simply for the purpose of illustration, but in reality the centres of formation may be England, Germany, over a portion of the Atlantic Ocean, Africa, Russia, and every other part of the world.

It will thus be seen that the same explanation, with slight variation of circumstances, holds good, not only to account for storms, hurricanes, tornadoes, and cyclones, but also moderate breezes such as we delight to feel.

Hitherto I have said nothing about the formation of nitrogen gas in the atmosphere, but as it forms four-fifths thereof there can be no doubt but that such gas is continually being produced therein, and that it acts its part in the formation of those currents of wind to which I have been inviting your attention.

It will now be my object to account for the formation of rain, &c. As already stated, the lower regions of the atmosphere are kept saturated with aqueous vapour by watery particles being continually attracted from the surface of the earth and ocean, and sustained in the air by the attractive force of atmospheric electricity. As such electricity becomes expended to form lightning or to generate gas, those watery particles, which are thereby deprived of the attractive, sustaining power of such electricity, unite together into drops of rain and descend upon the earth. The same explanation will apply to the formation of dew, and also snow, except that as the watery particles become deprived of the sustaining power of electricity in a region of the atmosphere where the temperature is below 32°, instead of combining into drops of water, they unite together in frozen fleecy flakes called snow. Hail is rain formed in the higher regions of the air where

the temperature is above 32°, but after being formed into drops they have to descend through a stratum of air where chemical action is at work absorbing heat, and wherein the temperature is thereby reduced below 32°, and while descending through this cold stratum of air heat is extracted from the falling rain drops until they freeze into globules of ice, called hail, and as such they reach the surface of the earth.

In addition to the great volumes of oxygen and hydrogen gases which are generated in the atmosphere itself, large quantities of them are supplied to the air from the earth's surface during the formation and decomposition of vegetable existences. During all kinds of vegetable growth, water is decomposed and hydrogen taken therefrom to form part of such vegetable: the liberated oxygen then chemically combines with atmospheric positive electricity to form gas, and mingles with the atmosphere as oxygen gas. During vegetable decomposition, the hydrogen which had been taken while water was being decomposed during vegetable growth becomes liberated, and by chemically combining with atmospheric negative electricity forms hydrogen gas, and ascends into the atmosphere as such. The same process takes place at the bottom of the sea during the formation and decomposition of all kinds of sea-weed vegetation, and it is known that the waters of the ocean are kept sweet by the ascending of such gases up through them while on their way to the atmosphere.

Having explained how immense quantities of oxygen and hydrogen gases are supplied to and generated in the atmosphere, it now devolves upon me to explain how these gases are expended. As it will be my object to show that atmospheric oxygen and hydrogen gases are expended to supply the earth's surface with all the light and heat it receives, I will first make a few remarks upon what light really is. When a Leyden jar is charged, by means of an electrifying machine, we know that it possesses both positive and negative electricity, the one existing outside, the other inside the jar. If one end of a connecting rod be first applied so as to communicate with the electricity that is on the outside of the jar, and the other end be then advanced to communicate with the electricity that is inside the jar, just before the communication actually takes place the two sorts of electricity, having a strong affinity for each other, rush together, chemically combine, and become a mass of flame or light—called the electric spark—which then disperses as light, and is absorbed by surrounding objects, leaving no residue behind. The same results take place with electricity obtained by means of the galvanic battery. If the light so obtained be tested it will be found to possess, with the exception of some slight modifications which admit of easy explanation, the same properties as what is called solar light possess; that is, if it be dissected by means of a prism it becomes separated into the three primary coloured flames—red, yellow, and blue. And if applied to produce photographic pictures it will do so in a similar way as what is called solar light is known to produce them. Therefore, the inference to be drawn is, that solar light so called and the electric light are substantially identical. If, instead of so expending the electricity we collect, we convey it into water by means of a suitable arrangement of metal wire, the electricity will, as before explained, decompose the water by separating its component parts, oxygen and hydrogen, when the positive electricity will chemically combine with the oxygen to form oxygen gas, and the negative electricity will combine with the hydrogen to form hydrogen gas. If, after these gases are formed and mixed together, they are ignited, the two sorts of electricity separate from the oxygen and hydrogen, rush together, chemically combine, and become flame or light. The particles of oxygen and hydrogen then chemically combine again to form water. If the light so obtained be tested it will also, with the exception of some slight explainable modifications, be found to be substantially identical with what is called solar light and electric light. I use the terms flame or light advisedly, for although flame is often spoken of as something distinct from light in reality it is not so, except so far that flame, as usually understood, contains larger masses of some kind of solid matter than those which compose what is commonly called light. For example: take the flame of a candle or gas lamp. In each of these we have oxygen and hydrogen gases in a state of combustion, and in the flame so produced there is positive and negative electricity, and also a large number of minute pieces of incandescent carbon or charcoal, which are saturated with and made white hot by the inflamed electricity which is in connection with them; in short, it is a charcoal fire, and that which the charcoal cannot hold and which disperses about the room is inflamed electricity—light,—and as such it is attracted and absorbed by surrounding objects; but

the atoms of incandescent electric matter which compose light are as really and truly material as the larger particles of charcoal which are seen in the flame of a candle, and which give it a more substantial appearance than the light which issues from it.

In addition to that vast ocean of electricity which covers the earth, it is stored up in and forms part of every natural existence. Most substances, when even rubbed, give it off, and it is set free during the chemical decomposition of all bodies. When it is produced by means of the galvanic battery it is obtained by the decomposition of zinc. When heated metals, immersed in oxygen gas, inflame, it is the electricity contained in the metals which chemically combines with the electricity in the oxygen gas to produce light, leaving the liberated oxygen to chemically combine with the remaining constituents of the metals to form oxides of them. Electricity is also present in all animal, vegetable, and mineral substances: it combines with them during their formation, it separates from them during their decomposition. At the Equator, where chemical action is most intense, there electricity is most active, combining with growing existences and separating from decomposing existences. These processes go on, gradually lessening in the rapidity of change from the Equator to the north and south thereof. The two sorts of electricity, not used up in effecting chemical changes in each respective hemisphere, meet at the poles, where they chemically combine and inflame to produce the aurora borealis, or northern and southern lights, the which, like all other lights, is absorbed by the earth to undergo and effect subsequent changes. Not only is chemical power more active at the Equator than towards the poles, but there is also a much larger portion of atmospheric air for it to act upon. This is occasioned by the centrifugal force resulting from the earth's diurnal motion. At the Equator the surface of the earth and the atmosphere over it are revolving at the rate of one thousand miles an hour. This part of the earth's surface, where the town of Ryde stands, with the atmosphere above it, are revolving at the rate of about five hundred miles an hour. Towards the north and south from the Equator this revolving motion, and consequent centrifugal force, gradually lessen until at the poles they become *nil*. The results of this difference of motion and consequent centrifugal force are, that from the poles towards the Equator the solid earth, and the water which flows freely over it, gradually extend more and more until at the Equator itself they are eight miles further from the centre of the earth than they are at the poles. This being a known fact, it must necessarily follow that from the poles to the Equator there must be a corresponding increase in the quantity of atmospheric air existing over and extending from the earth's surface.

Finally, it will be my object to explain the part which the sun acts in inducing light and heat over the earth's surface. I have already classified the manifestations of power under three heads, that is, as mechanical power, chemical power, and vital power. In my subsequent explanations it is to the two former I shall more particularly refer. I have also explained that matter, caloric, and power, as the constituent elements of every natural existence, are always undergoing changes in their states, and also in their proportions in relation to each other, nature being a system under which every existence is undergoing change, but in which nothing is lost. To further illustrate my meaning I will refer to ourselves as one class of natural existences. In order to exist we are compelled to take food and water. After having done so, without any effort or control of our own, that food and water are acted upon by chemical power and compelled to undergo decomposition in our bodies, during which process suitable juices are formed from the decomposed elements and conveyed to repair the loss which the various parts of our bodies are continually sustaining by that wear which is common to all animal existences. Gas and vapours are at the same time formed in our bodies, and these, on coming in contact with the oxygen gas we inhale every time we breathe, are compelled by chemical power to combine and undergo combustion, during which process the oxygen gas which previously contained 7226° of latent caloric more than the newly-formed carbonic acid gas into which it changes. Such 7226° of latent caloric becomes liberated, and by diffusing itself through the body supplies that quantity of sensible heat which is always necessary to animal life. During these chemical decompositions the body not only obtains the various juices and the heat so necessary to animal life, but it also obtains power, not only to move its limbs, but also to use, independently of the body, to effect mechanical changes in other existences around us. The power we thus possess and use we first obtain from the nourishment we take, and which becomes separated

from it during the decomposition which chemical power compels such nourishment to undergo in our bodies.

I have already also shown how power can be separated from steam, and made use of for driving various machinery and for other purposes. If time permitted I could show how it is obtained from running water and from wind, &c., for similar purposes; but, feeling that I have advanced sufficient to prove that it can be separated from elements with which it was previously chemically combined, and that as an element it possesses an independent existence, I shall now more particularly refer to it in connection with the heavenly bodies. I have already shown that the power of gravitation, which controls the movements which the various heavenly bodies undergo with relation to each other, is but another name for what we understand as mechanical power. There can be no doubt but that in all the other heavenly bodies every existence connected with them is undergoing changes the same as on the earth; and that during these changes the element power is continually being absorbed while effecting some and liberated while effecting others, in a similar way that caloric undergoes changes; and as, in the case of caloric, a large quantity, in the state of free heat, is always connected with and diffused through every existence, so a large quantity of free power is always connected with and diffused through every existence. This power manifests itself to us in the attractions and repulsions which all bodies manifest more or less towards each other, whether they be animate or inanimate. That this power is not confined to the existences belonging to each individual heavenly body, but that it acts between one heavenly body and another, is proved by the rise and fall of tides in the ocean; and there can be no doubt that between heavenly bodies, as between bodies that are indigenous to the earth, the actions and reactions of such power are always equal, that is, as one heavenly body exerts power over another, that other exerts an equal quantity of power back again.

(To be continued.)

MINING COMPANY OF IRELAND.

THE following is the report read at the half-yearly meeting of the above prosperous company held on the 4th inst. at their offices, Lower Ormond-quay:—

"The company's operations for the past half-year have resulted in a net profit of £9,140 12s. 0d. The quantity of copper ore raised at Knockmahon mines during the half-year was 2,831 tons, compared with 3,214 tons in the previous six months, and 3,392 tons in the corresponding period of 1864. The shipments of copper ore were 2,336 tons—value, £17,142; and the net profit was £5,937 12s. 9d. At Luganure mines the raisings of lead ore were 724 tons, compared with 765 tons in the preceding half-year, and 829 tons in the corresponding six months of 1864. The amount of ore delivered to the smelting works at Ballycorus was 726 tons—value, £7,790 18s. 6d. The net profit for the half-year is £1,201 1s. 8d. At Slievardagh collieries the output of coal and culm was 24,077 tons, and the sales were 24,749 tons. The output in the corresponding period of 1864 was 24,123 tons, and the sales were 23,243 tons. Net profit, £1,173 7s. 2d. At Duhallo collieries the output of coal and culm during the half-year was 2,327 tons, and the sales were 1,633 tons, compared with an output of 948 tons, and sales 1,206 tons, in the corresponding period of 1864. The profit for the last six months on the working of this concern, amounting to £107 1s. 8d., has been carried to the credit of the new fittings account, leaving the balance now standing to the debit of that account at £3,697 9s. 8d. At Ballycorus works the net profit on the operations of the six months is £1,204 10s. 7d. There has also been brought to the credit of this account a sum of £700, the estimated value of the flue dust applicable to this half-year, and a sum of £18 19s., the balance, as now ascertained, of the value of flue dust for the year ended May, 1865. The working of Corrig Castle mill, county of Waterford, has resulted in a profit of £148 2s. 4d. on the half year. The directors recommend a dividend at the rate of 13 per cent. per annum, free of income tax, payable on and after Monday next, the 8th inst."

The chairman (Francis Codd, Esq.), in moving the adoption of the report, entered into a lengthened statement of the present state and future prospects of the company. He read extracts from the reports of the several mining captains employed, and continued:—

"From the reports that we have had from Captain Clemes I think I may confidently state to you that the produce for the next six months will not be less than it has been. On the contrary, we can deduce, from letters written to us by Captain Clemes, that he anticipates a larger product during the next six months. We will now come to the monetary part of it, and I begin my remarks by saying that in the

memory of the oldest director of the company the price of copper ore was never so low. The price of from 17 to 18s. is considered an exceedingly moderate one. We had rarely been lower than about that. We were lower in the half-year that terminated in June last. This half-year we have been making sales at from 15s. 1d. down to 14s. 1d. When matters came to that crisis we determined to hold our hand and sell no more. Matters continued in that way until nearly the close of the half-year, when we were able, in consequence of some little stir in the market, to effect a sale of one cargo by private contract at 18s., and we have since, in consequence of the little excitement produced by the Chilean affair, sold one cargo at 18s. 9d. We believe we shall be able to go on selling at about that price; but, although we have a very great objection to speculate, we feel that in the present state of the mineral market, and especially of the copper market, and having reference to this dispute between Spain and Chili, we should be very unwise to sell our property. I am confirmed in that opinion by the fact that about all the large proprietors of copper ore are doing exactly what we are doing, namely—holding their stock. We believe that the interruption of the trade from Chili must necessarily create a very considerable reduction in the quantity of ore which will reach England; and we have no apprehension of lower rates; on the contrary, we think it very likely that they will be higher. We have on hands 2,830 tons, the value of which is £24,130. We have brought to the credit of the account about the sum of £18,500, having deducted as usual, 25 per cent. So that you will be good enough to remember that, in consequence of the very large stock of ore which we have held over, assuming the price which we have averaged, and no more, to be obtained, we really have the dividend on the value of that ore Our business in manufactured ore has increased considerably. We send it to every market in Ireland, and in some instances we are able to compete with English proprietors. But the price is so low that still extended business does not much extend our profits. We, however, are in a position to say that we have formed a connexion that will be available when trade improves, and we see every prospect of its improving. You perceive by the profit and loss sheet that a sum of £700, the half-year's produce of the chimney of Ballycorus, has been brought to the credit of the profit and loss account. You will recollect that heretofore the produce of that chimney was brought out to profit and loss account, but credited to the Ballycorus improvement fund. It was only necessary to do that once a year. Now, as it is to go to the credit of profit and loss, we consider it only reasonable and proper that every half-year should have its own proportion, and we therefore have put £700—£750 would be more correct, the total being £1,500—to the credit of this half-year's profit and loss account, and henceforward we will place half the proportion of profits to the credit of profit and loss account. Carrig-Castle mills show a small profit as usual, but as sudden accidents are at any moment liable to occur in a place of that kind, we have thought it proper to put by a reserve fund to cover any expenses that might be incurred in that way. We have consequently put by a sum of £500, and we think there is no occasion to put by a further sum, and henceforth all profit and loss will be put in the report, under their proper headings. You perceive, by the report, that we have a slight loss at Glendalough, in consequence of improving a portion of the property held by erecting cottages for the miners, and building a house for the steward; but, as this is a permanent improvement, we thought it would be improper to charge all to the debit of one half-year, so we therefore determined to put 10 per cent. to each half-year. In the debit of profit and loss you will also perceive that there is a sum of £222 14s. 1d. charged as a loss, by sending the products of our mines to the Dublin International Exhibition; but the entire sum will not be lost, as there is a large case and other things, which we expect will bring in half the sum at least. For the articles we sent to the Exhibition, and for the outlay consequent upon our sending them there, we had the satisfaction to receive certificates and medals for superior manufacture of lead, and I think that in itself is something for the company to achieve. The specimens of our manufacture which we sent to the Exhibition have been considered so creditable to us, that the Government of Italy, who intend to hold an exhibition of their own, have applied to us to allow those mineral specimens to be removed to Italy for the purpose of being exhibited there; and I see no reason why we should not gratify a Government who do us so great an honour."

Mr. Samuel Bewley was moved to the second chair, and Mr. Moore moved a vote of thanks to Mr. Codd for his dignified conduct while presiding over the meeting, and for the clear and able statement which he had made of the affairs of the Company.

Mr. Edward Fox, in seconding the resolution, said that they had that day heard from Mr. Codd one of those clear statements for which he was so remarkable.

He had gone through the affairs of the company for the past six months with a minuteness and care which could not fail to inspire confidence, and confirm an impression which he had supported, that a better choice or a more judicious selection could not be made of a gentleman to occupy a position of trust and responsibility, and one requiring so large a measure of intelligence for the due performance of it.

THE BELFAST ALBERT MEMORIAL.

THE following copy of a letter from Sir Charles Phipps to Lady Charlemont, in reference to the Belfast Albert Memorial, speaks for itself. "Sir Charles Phipps presents his compliments to Lady Charlemont. General Grey, who is at present absent, has forwarded to him her letter, and the drawing of the memorial to the Prince Consort about to be erected at Belfast, and a photograph of the drawing. Sir Charles Phipps has had the honour to lay these representations before her Majesty the Queen, who admired them very much. Her Majesty has kept the photograph of the drawing, but has directed Sir Charles Phipps to return the drawing itself, with the assurance of her Majesty's appreciation of Mr. Barre's attention. Not knowing Mr. Barre's address, Sir Charles Phipps has taken the liberty of sending the drawing to Lady Charlemont."

Last week the preliminary work of boarding in the site of the intended memorial in Queen's-square was begun. The boarding will embrace the Victoria-street crossing on the west side of the square, but a temporary one will be supplied. There will be a carriage way of 26 feet on each of the north and south sides of the square between the curb and the boarding, which it is considered will amply suffice for the purposes of traffic, while the foot pavements remain unchanged. The boarding will extend eastwards 108 feet from its frontage in Victoria-street. Messrs. Fitzpatrick, Brothers, Belfast, contractors.

NOTES OF NEW WORKS.

The towns of Charlemont and Moy, County Tyrone, were lighted with gas for the first time on New Year's night, by a joint-stock company, formed, with limited liability, principally from amongst the consumers themselves, of which company the Earl of Charlemont is chairman. The contract for the works, mains, &c., was carried out by Mr. Hollwey, gas engineer and contractor, of Kilkenny. The same gentleman has in progress the works at Kingstown, for the Commercial Gas Company.

Some very pleasing improvements have been carried out of late by George Woods, Esq., of Milverton Hall, on his estate in the village of Naul, Co. Dublin. They consist of a line of isolated dwellings suitable to the better class of country artisans, and present a great contrast to the dilapidated tenements of which they stand in lieu. The whole work is carried out with best materials, the dwellings having a workroom, kitchen, scullery, and store on the ground floor, with four chambers above, round which studding is resorted to in parts to add to their comfort. Each dwelling has a yard in rear, with accommodation for a couple of cows, as also for pigs and fowl, &c. One of the dwellings has already been occupied by a mason, and another by a carpenter, and the proprietor hopes to arrange with other trades such as a smith and a tackle-maker, &c., so that they as well as the strong and wealthy class of farmers, spread round as his tenants or otherwise, may be benefited by the move. The work has been carried out in very creditable manner by Mr. James Coffey, builder, of Balbriggan: the plans and instructions being furnished by Mr. S. Symes, architect, of Dublin. This liberal landlord has further works of similar nature in contemplation, and just now has taken in hands the new roofing with slate some of the old thatched premises of the village which ere long will add much to appearance, but more important still, will add much to the comfort of the occupants, urging them to remain at home in honest exertion instead of wandering to El Dorados, where the loss of peace is only discovered too late to repent.

The organ in the Moravian church, Gracehill, Co. Antrim, has been entirely rebuilt by Mr. J. C. Combe, organ builder, Belfast, and will be reopened on the 18th inst. by Dr. Chipp, of Belfast.

A new Roman Catholic school-house is to be erected in Barrack-street, Belfast, for the Right Rev. Dr. Dorrian.

The Belfast Charitable Society are about to erect additional buildings at their premises, Donegall-street, Belfast, better known as the Old Poor-house. Mr. W. J. Barre, architect.

Kilkeacon church, Co. Limerick, is at present under repair, under the superintendence of the Ecclesiastical Commissioners.

PROVINCIAL NEWS.

Mr. Dalway, of Carrickfergus, Co. Antrim, has been successful in his search for salt brine at Nine Mile Row on his estate. The salt is of a superior quality, and the strength of the brine such that one quart yields one pound and a-half of salt. The depth of the shaft is at present only 300 feet, and as the volume of brine flowing is not sufficient to warrant the creation of pans, it is proposed to sink the shaft a little further. It is confidently hoped that the pressure then reached will enable the work of purification to be begun, and repay Mr. Dalway for his previous expenditure.

The Drogheda bridge Committee have accepted the tender of Messrs. Brennan and Costello, of Dublin, for £6,650 for erecting a new stone bridge over the Boyne, in the centre of the town. This was the lowest tender.

The Belfast Church Extension and Endowment Society have advertised for a piece of ground as a site for a church in Millfield or Smithfield, Belfast. The ground required must be 80 or 90 feet in front, with a depth of 120 feet.

Messrs. Bell and Marsh, architects, High-street, Belfast, are about to erect a new independent chapel at Albert Bridge, Belfast, for the Rev. Sam. Rodgers.

A people's refreshment room has been opened in Cork, the Mayor presiding.

The Belfast Town Council are to pay £12,000 for the piece of ground intended for a public cemetery, and a head rent of £30 a-year to Lord Donegall for a portion of it which they intend to lay out as a people's park. A further sum of £8,000 or £10,000 will be required for enclosing and forming roads through the cemetery, and erecting the necessary buildings thereon.

A Mr. Mott, of London, has purchased in the Bankruptcy Court property belonging to the Bagnalstown and Wexford Railway for £25,000.

A new organ, built by Messrs. Bevington and Sons, London, has been erected in the Magdalene Church, Belfast, and was opened on Sunday, the 31st ult.

The fortifications on Spike Island are being strengthened. The entire of the fort walls round fort Carlisle are to be protected by *chevaux de frise* consisting of iron spikes projecting at right angles to the wall from its top.

The Earl of Bandon has presented to the parish of Durrus, on Dunmanus Bay, a large addition to the churchyard, which had become overcrowded by burials. His lordship has also presented a handsome organ to the parish church.

For the festivities which have taken place at Hillsborough, Co. Down, to celebrate the coming of age of Lord Hillsborough, eldest son of the Marquis of Downshire, a large temporary building was erected to the west of the castle, which served the purpose of a ball room and a theatre. It was 100 feet in length and 50 feet in breadth, the walls being hung with white and scarlet cloth, interspersed here and there with pretty devices and mottoes. The architects were Messrs. Lanyon, Lynn and Lanyon; Mr. John Lowry, Belfast, builder.

MISCELLANEOUS.

The master architect of Cologne Cathedral states that with the aid of the present resources, which yield annually 250,000 thalers, the two towers, together with all the statues and ornamentalations within and without the dome, will be completed within ten years. Instead of the four millions asked for by the late architect, something over half that sum will now be sufficient—both materials and transport having become cheaper—for the completion of the work of many centuries. In three years from this time the northern tower will be finished, and with this the well known crane, the symbol of Holy Colonia, will disappear for ever. In two years' time a locomobile will be seen lifting up the stones for this tower, and doing within less than an hour, with the aid of two men, work which took, in the middle ages, sixty men for a whole day. At present for every foot in height this tower costs the sum of 5,700 thalers (£810).


A Paris architect, borrowing the idea from the Romans, has invented a brick which hardens with time, completely resists humidity, and is said to realise an economy of forty per cent. in building. This system is applicable to every kind of construction, but must be peculiarly interesting to those who occupy themselves with improved dwellings for the poor.

The design of Mr. G. G. Scott, for the Midland Railway terminus and hotel in London has been chosen. The style is Gothic; estimated cost about £300,000; frontage, Euston-road.

We learn that a project has been started for the supply of London with water from the Welsh mountains! It is only to cost a matter of twenty-two millions, nine of which it would take to carry out the works, the residue being required to buy up vested interests. The present supply amounts to a hundred million gallons per day, one half of which is obtained from the Thames, notwithstanding that the river, above the point at which it is tapped for the cockneys, is polluted by the sewage of cities, towns, and villages, containing in the aggregate over a million inhabitants. By the new works a supply of 220 million gallons daily of pure water would be secured at high pressure through an aqueduct 150 miles long.

At a recent meeting of the Photographic Society of London, Mr. Woodbury read a paper on his new process of photo-relievo printing. This is a first step in applying photography to book engraving, the whole of the process being mechanical, and the pictures finally printed from metal blocks in an ordinary printing-press. When an alkaline bichromate salt is added to a gelatine solution, and a film of the compound allowed to dry, it becomes insoluble in warm water after exposure to light, whilst those portions not so exposed are not dissolved, but swell up in the water. The film is formed by pouring the solution over a thin transparent support, such as mica or collodion, and allowing it to dry in the dark. The mica side of the film is then placed next to the negative, and the latter exposed to light. On placing the film in warm water, the portions unacted on are dissolved off, and the picture stands out in relief. An electroplated reverse of the picture may then be obtained, but the simplest plan is to place the picture under hydraulic pressure, in contact with a plate of lead or type metal, and notwithstanding the soft character of the gelatine, a perfect reverse is obtained in the metal. A feather similarly treated will thus produce all its most delicate downy filaments in lead. From the metal matrix the pictures have to be printed, the shadows of the picture corresponding with the depths of the hollows. Hence a semi-transparent ink must be used, and ordinary printing ink is inapplicable. The ink is made of gelatine and lamp-black, or any other suitable colouring matter, and the pictures have to be printed at a warm temperature to keep the ink liquid during the operation.

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TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

Books for Review in this Journal should be forwarded to the Publisher, at the Office, 42, Mabbot-street.

All Communications respecting the DUBLIN BUILDER, should be addressed to Mr. PETER ROE, 42, Mabbot-street, to whom all payments for Subscriptions and Advertisements must be made.

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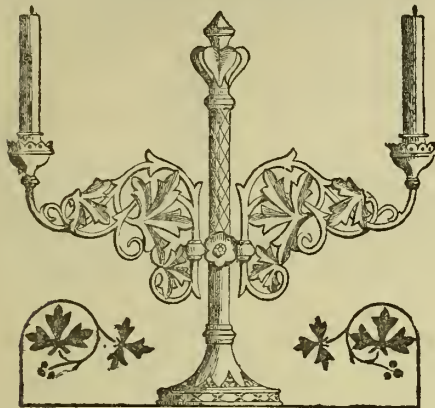
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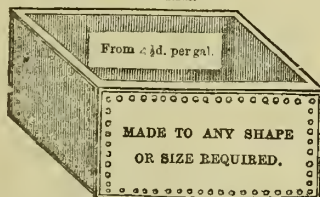
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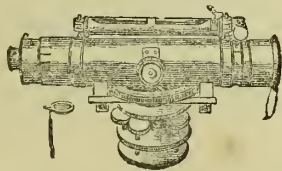
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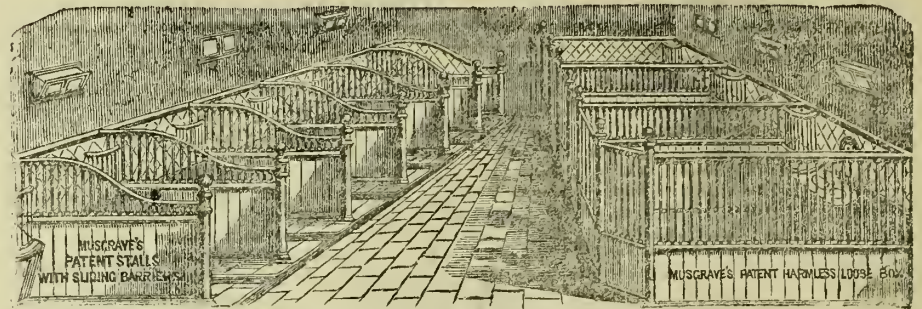
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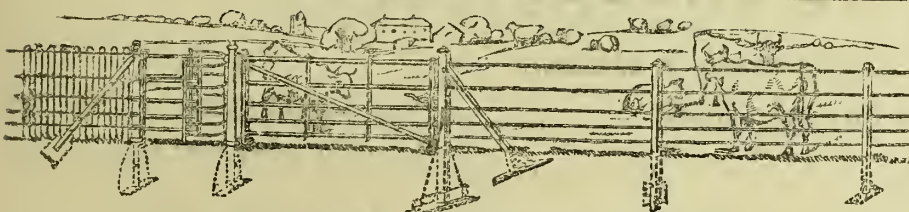
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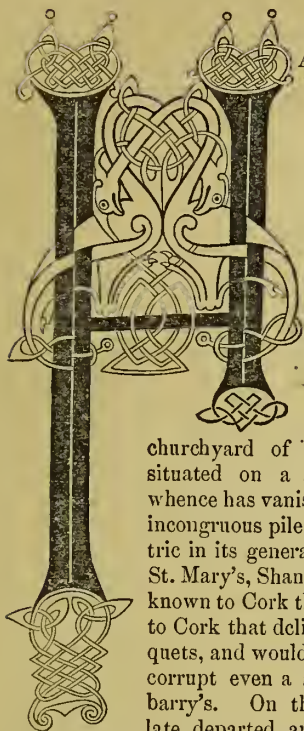
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The Dublin Builder.

VOL. VIII.—No. 147.

A GLANCE AT SOME RECENT WORKS IN CORK.*

ST. FIN BARR'S.



HAVING taken our way thro' an out-of-the-world quarter of the town bearing an aspect more old and dingy than ancient and interesting, at no considerable distance from SS. Peter and Paul, we find the ancient

churchyard of St. Fin Barr, situated on a steep declivity whence has vanished the former incongruous pile not less eccentric in its general bearing than St. Mary's, Shandon, which was known to Cork the irreverent—to Cork that delights in soubriquets, and would not hesitate to corrupt even a saint—as Sinbarry's. On the site of this late departed and unregretted edifice is being raised the Protestant Cathedral Church of St. Fin Barr, whereof all the architectural world have heard not a little, for will not all our readers at least remember how as an ecclesiastical venture this was launched into the world as we may say with the architectural drum hoisted, amid "violent winds from opposite quarters?" Competitions generally do produce a little breeze, but an aggravated hurricane of discontent may be said to have raged in the professional atmosphere after the selection of Mr. Burges' design by the Committee. Why the burst of indignation should have been so overwhelming in this case more than in others more scandalous, we cannot say. To be sure this design did not comply with certain conditions very distinctly set forth in the "instructions," but surely competitors, if they had any experience, would know that that was the last thing to disqualify it with a competition committee. No doubt competitors were most unfairly treated, but the storm having blown itself out, and being all of us unanimous as to the injustice in the case, we might as well let the contention drop, and candidly and unselfishly judge this building in course of erection on its own intrinsic merits as to its fulfilment of the special condition of adaptation to the purpose for which it is being built, and not as examined by the light of the committee's instructions to architects, which is an entirely different issue. We have characterized this church and the one last under consideration as two remarkable works, an epithet which we applied to them in no vague or limited sense, although their respective claims to it rest on wholly different grounds. The former demanded a more than passing notice as a very costly, elaborate, and noble work of Art; this one is of surpassing interest as a bold attempt at solution of a curious problem. What should, and what shall be

the type of cathedral church for the use of the body of Christians to which this belongs, must be a question to attract the attention of every architect, no matter in what fields of church-building his vocations may lie. It is only in our own day that the Anglican Church has ventured to go into the cathedral-building line at all, and how it should do so, it has been admitted, has been a very pretty nut to crack. Admittedly the ancient types which it has had to go on were the expression in a great measure of another age, and a different ritual. There were consequently many features which common sense and consistency forbid, and many others which the parsimony or want of faith, or some such failing of the XIXth century denied it, and what was it, and what is it to do? The interest of St. Fin Barr's Cathedral lies in its experimental and very partial effort at solution of this problem, for as to its being anything more, it would be absurd to expect it in the present very unsettled state of the question, and especially in a cathedral on the gigantic and satisfactory scale which a proposed expenditure of *fifteen thousand pounds* would admit. Now we claim for Mr. Burges' special credit for the way he has dealt with the difficulties of the question, with a sum at his disposal, which, although it may exceed the amount originally proposed, would be still ridiculously inadequate to build a cathedral church according to our preconceived notions of one. A choir it must have, likewise a spacious nave and transepts, central and western towers, aisles, triforium, lofty clerestory—everything in fact which we have been used to meet in the best cathedral circles, and all for £15,000 or £20,000. With too conscientious an ecclesiological conscience, therefore, to do anything else, Mr. Burges makes an effort to give us all this in so far as the shallow depths of the decanical and capitular purse will let him, to the best of his ability, and the result is a little small-scale model of a cathedral, for we can scarcely regard a building complying with all these conditions and measuring not much more than 150 feet internally from E. to W., with a nave of not much more than 23 feet wide, and the bays of which are not wider than 13 feet from centre to centre, as aspiring to be anything more. We do not write these observations in any spirit of disparagement—quite the reverse—for to our own poor judgement we can add the weight of the honest and generous testimony of more than one distinguished and unsuccessful but not disappointed competitor, that Mr. Burges' design is both a very remarkable and a very admirable one, the great general merits of which more than atone for some eccentricities, and for some quaint if ungraceful archaicism of detail. It may not be ill-timed to remind our readers of what the church is to be. If our description should prove inaccurate hereafter, it must be borne in mind that we derive our information solely from the already published information.

It comprises a nave of eight bays (including the western towers) about 80 feet in length, with lateral aisles about 13 feet in width, a short structural choir of about 30 feet in depth terminating in a semicircular apse, round which runs a choir aisle, or ambulatory in modern parlance, the same width as the nave aisles. The ritual choir is extended westwards to the western transept-arch, thus making it about 50 feet in depth. The transepts are short, and over their intersection with the nave and choir the proposed central tower is to rise. Now to us the central tower appears the most debatable point of the whole. Granted, as the architect has rather more strongly put it, it is desirable as a feature externally to carry

off the short length of the building, the general structural difficulties which it shares in common with most other central towers—that of supporting a heavy superstructure on four problematically sufficient legs—and the particular objections which it is open to, as obstructing unduly by its supporting piers, in a building of such contracted area the view of the choir from the congregation, render it at least a feature questionable in a utilitarian and common sense point of view. An open timber roof is contemplated over the nave, and the published view of the interior shows an arched and cusped sectioned roof over the choir, the spandrels of which show towards the nave under the eastern transept arch in an awkward and make-shift manner; beneath this ceiling the tie-beams are shewn radiating from a single molded king-post at the level of the springing.

The style adopted throughout is very severe Early French, archaic even to clumsiness in some places. In a former volume of the *Building News* will be found a view of the western front, a remarkably simple composition, the three towers having lofty unbroken spires springing almost at the level of the nave roof. As a whole design we can respect this one for its strict conscientiousness and truth, and for its faithful adherence to the selected style, but as a modern work, as a development of the architectural mind of the age we must join issue with its admirers. We know too much in these days of the civilization of architecture to respect in a modern work an untruthful imitation of that honest blunt integrity, which lent a dignity to early ancient work. In a spirit of honest reverence for an honest architecture we can regard with absolute affection things of which we take copies however good with impatience from our contemporary workers. Do not let it be supposed we are advocates for the refinements of stringy Perpendicular or pseudo-classic or the abomination of any age subsequent to the twelfth century entering into our work, but we think a certain spirit other than that displayed in this, is called for from our chastened experience of what the world has done before us. We know that these be heretical utterances in the eyes of the ancient Goths, and an abomination to those whose harmless delight is in the art of illumination and design as set forth from mediæval glass and ancient MSS., in the sketch book of Willars de Honecourt and the Bayeux tapestries, but we hold, however, that good architects should be above being carried away from the true life of their work, by quaint oddities of pen and pencil and—what else?—why to cut a long story short, we admire St. Fin Barr's Cathedral in spite of our own theories, and we esteem Cork as fortunate over many cities in that she has, by good luck more than anything else, fallen upon such good fortune in her architect and her church.

MANSION HOUSE OF MR. B. L. GUINNESS, D.L., M.P.

In this number we give a sketch of the town mansion of Mr. Benjamin Lee Guinness, M.P., now in course of erection in Stephen's Green, South, the grounds of which run down to those of the Winter Garden. As an illustration so very quiet and unpretending a front is less remarkable as a work of architectural importance than from the interest which the name of the well-known and respected owner gives it, and from whose own designs it is said to have been built. The interior of the mansion promises to be of a very important and costly character, and to this we hope to have the pleasure of returning on a future occasion when it is more fully advanced. The works, we believe, have been carried out by the Messrs. Murphy of St. Patrick's Cathedral notoriety, under Mr. Guinness's own immediate directions, without the intervention of any professional architect.

* Continued from page 16, ante.

ST. THOMAS' CHURCH,

MARLBOROUGH-STREET.

THE Dublin parish churches of the last century afford a curious study enough for anyone who will devote some leisure to visiting them and examining them in detail. Erected for the most part in that era of progress in which Dublin first established a claim to be considered a city of architectural pretensions, from 1759 to 1800, they are imbued with a strong family likeness, and with certain peculiarities of their own, shared, in common with contemporary civil buildings, which would justify us in claiming for the Irish Renaissance architecture the distinction of a separate school. This line of distinction is not much to be wondered at when we consider the comparative isolation of the metropolitan society of that period, the difficulties of foreign travel, and the rarity of all illustrations of great works elsewhere, except in the cabinets of the *virtuosi* of the day. It is not, therefore, surprising that the peculiar genius of Castle—the almost forgotten founder of the school—and Gandon set their seal on all the works of the 18th century, and that their mantle, and no one else's, was alone to be found parted amongst all their successors in the subsequent era. Churches of no mean pretensions we may truthfully enough describe the ecclesiastical efforts of the whole school, but alas that we should have to say it that this very pretension is their most striking characteristic.

An unhappy fatality seems to have hung over all these undertakings, either that they were never destined to be completed, or if completed, that they should be so under some unfortunate star. St. Anne's, St. Thomas', St. Catherine's, and several others until this day expose dreary samples to the gaze of the passer by of what their respective façades may, might, could, would, or should have been. St. Nicholas Within is in ruins; St. Werburgh's, distinguished above all its sisters by having a lofty spire *completed*, could not support its dismal burden for more than threescore years, and later still the cycle of disaster and misfortune was completed by the perpetration of the unfortunate Round Church, now happily vanished from the scene, and by the costly and extravagant St. George's, where a sum of £70,000 were disposed of, to the utter impoverishment of the parish, it would be hard to say how or where. It is a mistake, however, to suppose that all these dreary unfinished piles we have referred to will not repay a visit to their interiors. They will be found, even if unfinished in this respect also, to be works of large and artistic conception, capable yet of great things; and, granted that plaster is the unworthy material wherein they are adorned, it will often be found to be plaster of no common kind, which the student of art may well afford to linger over.

Least of all, we are sure, would the rambler in Dublin ever dream of finding anything more than of passing interest among the incongruous pile of building—with, however, a small sample portion exquisite in refinement of detail—which looks drearily down Gloucester-street, and yet if we were asked what church of the Rococo style in Dublin is capable of being made most of, we would unhesitatingly say St. Thomas'. A fine spacious interior, with the traces of an artist's hand in its breadth of treatment, in many carefully modelled details—with of course some faults. The galleries are narrow and leave a great open area with good effect in the body of the church; the central passage has a *roomy* and dignified effect; the light is introduced, and with a happy result, entirely above the gal-

lery level, and the chancel—for these 18th century churches did not ignore that feature altogether—although it is of shallow depth, is of not unpleasing design, and effectively lit by a semicircular light over the entablature of a Corinthian order, and by oval lights in the semicircular arched ceiling—the last mentioned are perhaps not perfectly satisfactory, but appear in some measure as if introduced as a matter of necessity. The plaster enrichments are of the best period and style of that hand-modelled plaster work for which old Dublin is so justly famous, and these display a suppression of all extravagance of design, and a general excellence which contemporary work does not always present.

With the aid of a grant from the Ecclesiastical Commissioners, and some contributions from other sources, something has recently been done by the rector and churchwardens of this parish to redeem their character as custodians of the fabric, from the charge of apathy or neglect. The great square loose-boxes which it was the fashion of the last century in Protestant city churches to hire out or sell to certain residents in the parish for their sole exclusive use if not enjoyment, have been banished, and low open benches substituted; an eccentric upper gallery at the (ecclesiological) west end, for which, however, the designer of the original fabric was not responsible, has been removed; the walls have been colored; the "two-decker" pulpit and desk in the centre have been finally divorced *a vinculo matrimonii*, and the pulpit at least has taken up a position more ritually correct on one side,* and the chancel has been colored in a manner, which if open to some criticism, on true principles of coloring, is at least a vast improvement on the former state of things, and the general effect of it, seen now for the first time, is pleasing. All these works have been carried out by Messrs. Barker, builders, under the auspices (with some trifling exceptions) of the Architects to the Ecclesiastical Commissioners.

Mr. John Smith (we presume one of those Smiths who were Gandon's able assistants at the Custom-house) was the original architect of this edifice. It was begun in 1758, and was completed, so far as it goes, in 1762. Giving the architect all the credit he deserves, and due weight to all the laudation which it was the fashion of a past day to heap on this and kindred edifices, we are inclined to think, after giving frequent study to the problem, that said Smith had rather misty ideas himself as to how he intended to complete his façade, or at least that he did not aspire to more than crowning with a pediment the low "frontispiece," as he would doubtless himself have called the squat building in front of the church itself. Still we are far from arguing that on this account the design as it stands is not capable of more than this. What there is good in detail and proportions, and a continuation of the work, *if carried out with a strict attention to truthful treatment of the essential existing features of the building*, might be a success. The interior, too, appears to us capable of yet more. There is something in the flat ceiling—we may be wrong—which does not look to us, withal good in detail as it is, like the work of the original Smith. At all events, with an arched or coved ceiling springing from the present principal cornice, and in which the existing engaged Corinthian co-

* We are driven to have recourse to a foot-note for a side-wind remark which can only have interest for a section of our readers. Why did the renovators of St. Thomas' stop short in their good work of re-arrangement? Why not remove the font to its proper position near the entrance, and substitute in its stead a prayer-desk facing the (ecclesiological) south? The lectern in its present position appears as such perfectly unobjectionable.

lums would enter as giving the key-note to the design, St. Thomas' Church is capable of being rendered one of the finest classic interiors in the city. But we fear all this is not even to be hoped for. No words of ours will avail to stir up a movement of such dimensions and of such spirit as will be necessary to take so great a work in hands; still the Protestant parishioners of a fairly well-to-do parish who have now seen what may be done with their church, might apply such moderate resources as they could command well and worthily so far as they would go.

NEW HOTEL AT WARRENPOINT, COUNTY DOWN.

It is proposed to erect a first-class hotel at this fashionable and favourite watering place. The yearly increasing number of visitors who flock to this shore for the purpose of sea bathing during the summer months demands that suitable hotel accommodation shall be provided. The company about being formed with a capital of £5,000 and with a local directory, cannot fail, we should foresee, in making the undertaking a profitable one. The owner of the estate has granted, on peculiarly favorable terms, a site situated within a few yards of the beach, at the extreme end of "Osborne-terrace," and within five minutes' walk of the railway terminus. The front will extend upwards of 200 feet, opposite to and parallel with the Promenade, a most delightful lounge

"At morn, at noon, or dewy eve."

From every room in the building about to be erected, visitors can have views of Carlingford Lough, and the mountains of Rosstrevor, Omeath, and Carlingford—scenery pronounced by those fortunate enough to have visited the locality, equal to any to be met with in foreign climes. In connection with the hotel, we are informed, there will be baths, billiard and reading rooms. The work will be commenced in the ensuing spring, and the plans will be so prepared that additions can at any time be made as the demand for increased accommodation proceeds, and that without at all interfering with the original character of the structure.

While wishing the company every success in their undertaking, we would suggest that the tariff of charges be so regulated as to suit the purse of all visitors to their hotel. The secretary (*pro tem.*) is Peter Roe, Esq., of Warrenpoint, a gentleman well qualified to be entrusted with the origination of such a well timed project.

A NEW CARLISLE BRIDGE.

A MEETING of the committee entrusted to look after this important matter of improvement in our city, was held on the 20th ult., at the Imperial Hotel, Sackville-street, for the purpose of having immediate steps taken to bring the subject under the attention of the Government. Alderman Campbell occupied the chair, and the meeting was attended by the city members, Mr. Benjamin Lee Guinness, and Mr. Jonathan Pim. Sir Edward Grogan, Bart., made an interesting statement in reference to the taxation of England and Ireland respectively. In the course of his observations he mentioned some important facts which had come before him while sitting on the Irish Taxation Committee, of which he was an active member. It appeared that while during the past fifty years the amount of taxation per head in England had greatly decreased, in Ireland it had doubled during that period. Yet no portion of the large sum derived from the taxation of Ireland had been allocated for public works of usefulness, of either a local or national character, which large sums were annually voted for beautifying and improving the parks of London. A brief discussion took place, and it appeared to be the unanimous opinion of the committee that if the matter were properly brought before Government during the ensuing session of Parliament, a sum of money would be granted for rebuilding the bridge. It was resolved that a communication should be addressed to the Irish members of Parliament, and others interested in the objects of the committee. It is intended to ask a grant from the funds under the control of the Commissioners of Woods and Forests (and to which Ireland contributes largely), for the purpose of rebuilding Carlisle bridge. We understand that an influential deputation will wait on the Lord Lieutenant on Saturday next. In our Nos. for August 15th and September 15th, 1862, will be found the premiated designs for this work, one of which we trust will shortly be carried out.

GOVERNMENT SCHOOL OF SCIENCE.

As announced in our last number the annual distribution of prizes to the pupils attending the above institution took place on the 15th ult. at the Theatre of the Museum of Irish Industry. His Excellency the Lord Lieutenant presided.

Sir Robert Kane having delivered an interesting lecture on "The various products resulting from the Distillation of Coal," proceeded to hand the prizes to the successful pupils. He then said he was happy to be able to report that during the year which had closed the Museum of Irish Industry had not only maintained its position as a place of education, but had satisfactorily borne out its character, both by the number of pupils attending, and with regard to the number which had presented themselves at the examinations. In the year 1864, the total number of students attending the various classes were 207; last year, 220. In 1864, the total number of students who had competed for prizes was 68; this year, 77. Therefore there was a greater number of students this year, and also a more active competition. On the part of his colleagues, as well as on his own part, he begged to thank his Excellency for his kindness in presiding over their proceedings. They were aware that he had given the subject of scientific education his anxious consideration, as a means by which the practical improvement of the country might best be promoted.

The Lord Lieutenant said:—I am greatly obliged to the president of this institution for the manner in which he has been pleased to refer to the interest I take in its welfare. He has not exaggerated that interest, because I am convinced that in this institution this country is destined to find the best means of scientific education for those who are desirous of perfecting themselves in so important a branch of education. It is a great satisfaction to me to know that there is every prospect that this institution will not only continue to occupy the important place it has hitherto occupied in the institutions of this metropolis and this country, but that it is likely to receive a still further endowment. It would be improper of me to enter into any details of arrangements which are not yet fully concluded, but I am betraying no secrets when I say that Sir Robert Kane, as well as others, are aware, with myself, that it is probable that this institution will be placed on a still firmer, more satisfactory, and wider basis than before. I am sure this institution well deserves to receive such an extension. Its importance cannot be for a moment doubted. It is not merely that there are many branches of practical industry which we hope to see further developed in this country, but also that it is only fair and right that every opportunity should be afforded to those who have a taste for scientific studies in this metropolis to obtain those advantages which are presented to them in other parts of the country. Although in Ireland there may not be as wide a field for exertion as other portions of the empire present, there is no reason why the talents of Irishmen, many of whom possess considerable talents and abilities, should not have facilities in institutions of this kind to acquire the knowledge necessary to enable them to become practical scientific men. On this ground I regard this institution as extremely valuable. Its objects have been, and will be, to afford the elementary knowledge which is necessary to persons wishing to perfect themselves in scientific acquirements, and to enable them to make that start which alone can help them afterwards to attain to eminence. You have heard from Sir Robert Kane a very interesting lecture on some recent scientific discoveries. You must be aware that very great fears are entertained by persons of great experience and research lest our supplies of coal may fall short; but what will be the prospect before us if gentlemen like Sir Robert Kane, pursuing these investigations, discover that we can not only burn up our coal, but that we can also drink it up? I think that so alarming and astounding a discovery as that which he has developed to us to-night cannot fail to strike terror into the minds of all who may desire a continuance of our manufacturing and industrial prosperity. And I really trust that if Sir Robert Kane, and others who take an interest in that branch of science, shall pursue that portion of their investigations further, they will also pursue another and a very interesting investigation—namely, what is to supply the place of coal when they drink it all up. I am convinced that there is, perhaps, no training which is more important and more useful than that close analysis and investigation which characterise the pursuit of the different sciences which are taught in an institution of this kind. Every day we see more and more how important it is that we should not confine ourselves by any old system of routine, or cling to old practices which, valuable as they may be, ought not to fetter us in our pursuit of knowledge. I think it must be more and more a subject of reflection how important it is that we should give such an extension to instruction as may enable us to present to every mind that kind of education which is most

calculated to bring out its powers. Some minds are better qualified to excel in one branch, and some in another; and I hold that the essence of a good system of instruction is afforded to all an opportunity of cultivating that particular branch of knowledge to which their minds are peculiarly adapted. That I believe to be the great cardinal principle of education at the present day. Combine that with the avoidance of mere superficial modes of instruction, and the training of the mind by such severe discipline as can be afforded by the cultivation of mathematics or by the strict analysis which chemistry or the cognate sciences may require, and you give to every one the best opportunity of making themselves useful to their country, of using the talents which God has given them, and of pursuing a useful career in life.

THE CITY ANALYST'S REPORT.

DR. CAMERON has presented his annual report to the Sanitary Committee of the Municipal Council. We extract therefrom the parts more immediately coming within our province:—

ANALYSIS OF PUMP WATER.—At the suggestion of Dr. Mapother, I have undertaken the analysis of water obtained from pumps, to which the public are allowed free access. It often happens that very well-flavoured and bright and clear water contains a large amount of organic matter; and in seasons when epidemics and endemics are prevalent, water of this kind may, and often has been, the fruitful source of disease.

SANITARY.—During the last year my services were at all times available to the Medical Officer of Health. I regularly inspected the chemical factories, and I have every reason to believe that the suggestions which Dr. Mapother and I made to their proprietors have been acted upon, and have greatly lessened the evolution of offensive gases and vapours from these establishments. I have also devoted some time to the attempt to mitigate the nuisance arising out of the large volumes of smoke which are poured into the atmosphere from the chimneys of breweries and factories. I have assisted in drawing up directions for the stokers employed in these places, which, if attended to, would greatly diminish the amount of smoke. I have directed attention to the facts that two large breweries are not furnished with proper chimneys, and their proprietors have, in consequence, promised to build suitable shafts. The directions which I framed for the chemical disinfection of dwelling-houses and stables have been carried into effect by a great many persons.

RECLAMATION OF WASTE GROUND.—Having brought under the notice of the committee the fact that several acres of land within the city boundaries were partly submerged, and were otherwise in a most objectionable state, from a sanitary point of view, proceedings were taken to compel the owners to reclaim those fetid wastes. The process of reclamation is now going on, and already more than two acres have been recovered from marsh and stagnant water.

OPEN DRAINS.—At my suggestion an open sewer, near the Ringsend basin, about 300 feet in length (and the channel through which flows the poisonous refuse matter from the gasworks), has been closed over, to the great comfort of the inhabitants of the locality.

THE VARTRY WATER.—Agreeably to the directions of the Waterworks Committee, I have made an elaborate series of experiments with the view of ascertaining the action of the water of the Vartny upon lead. This investigation has been completed, and the results laid before the Waterworks Committee. In my report I recommended the use of an alloy for the manufacture of pipes, upon which I guaranteed that the Vartny water would exercise no corrosive influence.

CHARLES A. CAMERON.

CORRESPONDENCE.

TO THE EDITOR OF THE DUBLIN BUILDER.

90, Stephen's-green.

DEAR SIR,—I was much surprised to find it stated among some remarks made in your impression of the 15th inst. on the church of SS. Peter and Paul, Cork, that there were "some traces of a settlement in the base of the future tower." As this statement is quite unfounded, I beg to call your attention to it in order that you may contradict it in your next issue. The building has been most carefully examined by the builder within the last few days, and no traces of a settlement have been discovered in any part of it. I can state on my own authority that there was never the slightest apprehension with regard to the security of the foundations of the tower.

G. ASHLIN.

Jan. 19th, 1866.

[As to the above we may add that we have had the pleasure to learn by a communication from Barry M'Mullen, of Cork, that "there is no foundation for the statement that any settlement exists." It is quite

possible that the indications of disturbance about the western doorway referred to by the writer of the article in the DUBLIN BUILDER of the 15th ult. are of no importance practically; a view of the case which his remarks in no wise contradict, and it is quite possible that any observations may have been unrecalled for, but were certainly not wholly without some shadow of foundation. The merest indication of a crush, the flushing of a single joint will sometimes indicate the presence of a serious evil, which justify attention being directed to the circumstance. That they do not do so in this instance, or that anything deserving of being called by the serious title of a "settlement" in the architect's and builder's idea of the term being applied, we are delighted both to hear and to admit on their testimony! A sincere interest in the building only dictated the observations made in the article referred to, and it is notorious that no exercise of skill is sufficient to prevent the possibility of slight local disturbances in such work as this, and more especially the erection of a great building so free from all defects of this kind on a foundation so thoroughly unreliable and abominable as exists in this part of Cork is an achievement of which an architect or a builder may take some credit to himself. That "slight indications" of some movement, however trifling, exist, we are however unable to retract, although we now feel quite at ease as to their importance.—ED. D. B.]

DUBLIN MASONIC HALL.

TO THE EDITOR OF THE DUBLIN BUILDER.

DEAR SIR,—As a brother Architect, if not Mason, perhaps without betraying any secret you could tell what has been done about the "Masonic Hall Competition?"

So long ago as August last, in answer to advertisements, many designs were submitted, and rumor had it about a month after that "a decision was come to, and a design selected to be carried out."

The committee is composed of the heads of the Masonic body in Ireland, who would not, I am sure, knowingly treat the competitors (who are all members of the Order) with even seeming want of courtesy. I would, therefore, through you beg to remind them that the designs were submitted in trust for the specific purpose set forth in their own advertisement, that they are required by ordinary custom and usage to proceed with reasonable despatch to adjudicate upon the designs, and award the premiums, and immediately afterwards to return the drawings of the unsuccessful competitors. If it be true that the design has been chosen which is to be carried out, the committee ought at once to select the second, award the premiums, and return the rejected plans. Ample time has elapsed since the drawings were lodged to justify the competitors in asking for the decision.

Yours faithfully,

26th January, 1866.

KNIGHT TEMPLAR.

THE UNHEALTHINESS OF IRISH TOWNS.—
NEWTOWNARDS.

THE following explanatory letter from Dr. Mapother was addressed to the editor of the *Medical Press*. In our last number we had something to say on the question at issue, and we quoted an extract from Dr. Jamison's letter to the above-named journal. We now willingly give Dr. Mapother's reply a place in our columns:—

"SIR,—I am much obliged to Dr. Jamison for his correction of my misquotation of the population of Newtownards, which in 1861 was 9,543, instead of 2,543, the number I copied from the "Official Irish Guide."

"However, as I struck the cholera-rate, fever-rate, and death-rate for the union, not for the town, no misrepresentation followed. To describe the town, I quoted Dr. Jamison's own words in September, 1864: 'Newtownards is dirty, unlighted, and unwatched at night;' and as he now pictures a very satisfactory state of things, the efficacy of town commissioners (since elected—three being medical men), has been clearly demonstrated."

"That something more is to be still wished for, seems to me from two facts. 1. That the last four quarterly returns (which confessedly do not give us the whole truth) prove the death-rate of the district, over one-third of which is rural, to have been one in 32.3 against one in 86, the rate in the rural unions with which I contrasted the mortality of towns, and, 2. Dr. Jamison, as Registrar, has recorded in all these quarters, deaths which show that almost every form of zymotic disease has been alarmingly prevalent.—

I am, Sir, your obedient servant,

E. D. MAPOTHER."

OUR IRON ROADS.

FROM an interesting paper recently read by Lord Naas at a meeting in the Town-hall, Naas, on the subject of "Railways," we abstract the following:— "He had ventured to hope that he might be fortunate enough to engage their attention and to interest them in laying before them a general view of the railway system of the United Kingdom, one of the most gigantic organizations to which human genius and energy had given birth. It was a subject which more or less interested every inhabitant of the empire. The railway now entered into the daily life of man. From birth to death it was ever present. Its shrill whistle announced alike the arrival of those who were to assist at the entrance into the world of the babbling infant and the departure of those sorrowing friends who had been paying the last duties to the dead. The general stoppage of the iron road would in a week spread darkness and absolute starvation over all their great cities. Business and pleasure were equally impossible without it, and the great black lines that now covered, like a net, the map of the country, might be said to represent the arteries and veins of British labour and life. The commercial enterprise of England—one of the main springs of her greatness and power—whose products were found in every clime, and whose navies float in every sea—was bound to the chariot wheels of the railway king. The goods train was as indispensable to trade as the air of heaven was to animal life; and to the old patriotic toast of "Ships, colonies, and commerce," might be added "the locomotive." But if the rail was so necessary an adjunct to the peaceful pursuits of commerce, it was not less indispensable in war. In the history of all modern campaigns it must play a most important part. For all purposes of social life, whether in search of pleasure or of health, they were dependent on the rail. No better proof of that was to be found than in the lighter portion of the literature of the day. It was said that since man was first made he was generally engaged in three great pursuits—making money, making war, and making love; and he thought he had shown that he now used the railway pretty nearly for all three. Facility of commerce had ever been the first element of national prosperity. In early ages they found that civilization was invariably attended, or even preceded by provision for the easy movement of persons and of goods. No people understood that better than the Romans, who, even in the remote portions of their mighty empire, left behind them roads which once reached from one end of the country to the other, and traces of which remain to the present day. The lives of the civil engineers of England, written by Mr. Smiles, contained the railway history of their country, and he commended it to their attention to see how patience, industry, and energy could enable men to raise themselves from the humblest ranks of life to be fit companions for princes, to confer everlasting benefits on their fellow-creatures, and to write their names in letters of gold in the industrial history of the world. It was difficult to state precisely the exact date when railways or tramways were first used as a permanent means of conveyance. Roads with wooden rails were first laid down in the neighbourhood of Newcastle for the purpose of conveying coals from the pit's mouth to the sea or river side. Nicholas Wood, the author of "The Practical Treatise on Railways," said some time between 1602 and 1649 was the first rough beginning of the railway existence. It was, however, certain that before the close of the seventeenth century the system was in general operation in the north of England. In the three quarters of the last century, James Watt and others had discovered and brought to considerable perfection the stationary steam-engine; but it was not until after 1784 that William Murdoch, a friend and assistant of Watt, produced the model of that to run upon common roads. In his remarks that he had made about railways he had spoken generally of those in the United Kingdom. In the Irish railways, important as they are to all of them, and much as they had done in promoting the advancement of the country, while the value of the paid-up shares and debenture loans outstanding on the 1st January, 1864, for England and Wales was 352 millions, in Ireland it was only 24 millions. Nineteen millions of passengers travelled by railways in England and Wales in 1864; in Ireland only 11 millions travelled in the same time. The total receipts from all sources of traffic in the same year were £28,000,000 sterling in England and Wales, and £1,500,000 in Ireland. The difficulties that attended the early steps of the railway enterprise in England were not experienced in Ireland to the same extent; for, though the Dublin and Kingstown line was among the very first that were opened in the United Kingdom, yet most of their lines were not projected until considerable progress had been made in the sister kingdom. The Irish lines, consequently, were made at a much lower cost, and,

on the whole, the return to the shareholders had been better. But the same lamentable mistakes were made here as in England in regard to the course of the lines. The Dublin and Drogheda and its continuation, the Belfast Junction, took the line of the coast, instead of piercing the rich plains of Meath, where traffic could be opened from both sides of the road. In the Great Southern and Western and the Midland Companies similar errors were made. The Royal and the Grand Canals cost nearly £4,000,000. They were ridiculously large, and through their whole length they were nearly parallel to and not very distant from each other. Yet, having that very fact before their eyes, the projectors of those railways committed the same blunder, though to a lesser extent, and for the very first 40 miles of their course the Great Southern and Western and the Midland Companies ran parallel. He was in hopes that some recommendations would emanate from the Royal Commission now sitting, which, if adopted by the Irish railway projectors, must have the effect of making these lines more useful to the public and more valuable to the shareholders. He had given a sketch of the advantages and growth of the British railways. He described their present position, to show what an organization they possessed and the enormous results which had followed their construction. He asked them to look at the length of their railways. On the 1st of January, 1864, the aggregate number of miles open in Great Britain and Ireland amounted to 12,322, one-third more than the diameter of the globe, one thousand miles more than the lengths of the largest rivers in each of the four continents, or much more than the distance from London to the farthest part of Kamtschatka. Of these 12,322 miles completed, 5,052 were single lines. Taking double and single lines together, the total lineal length of railways in the United Kingdom was 19,590 miles. He had no doubt that those who had been kind enough to follow him through his statement would like to know of the cost of railways. The amount of capital expended in this vast work was almost fabulous. The amount authorized by Parliament to be raised for railway works amounted at the beginning of 1864 to £475,000,000 sterling. It was difficult to realize to the imagination what that £475,000,000 was. It was more than seven times the amount of the value of all the real property of Great Britain; it was more than half of the entire amount of the National Debt. They had spent £100,000,000 on the Crimean War, which resulted in the occupation of one half of the city of Sebastopol, with a loss of 25,000 precious English lives. The expenditure of just four times that sum had secured to them the advantages of internal communication all but perfect, and an advancement in science and the arts unexampled at any period of the history of the world, great national progress unchecked, and property and happiness increased beyond precedent. The works which had been completed to accomplish these wondrous results were stupendous in their magnitude. It was calculated that their tunnels traversed hills and penetrated beneath mountains to the extent of nearly 100 miles. Of railway bridges there must have been built at least 35,000. He could not tell the extent of the earthworks completed at present, but Mr. R. Stephenson, speaking in 1856, calculated it at 550,000,000 cubic yards. Since then 4,000 additional miles of railway had been constructed, so that the mountain would now be one-fourth larger than he had described. What was the wear and tear of this enormous length of line? The permanent way might be said to consist of sleepers, chairs, and rails. Watt, 9 years ago, stated that there were then 2,225,000 tons of iron laid down in rails alone, resting upon 50,000,000 of iron chairs, weighing nearly 225,000 tons more. In 1863 no less than 116,500,000 miles were traversed in the United Kingdom by 4,675,000 separate trains. What was the number of miles annually run over by their engines? The distance could be somewhat appreciated in its enormous magnitude when he reminded them that it was 20 millions of miles farther than the distance from here to the sun. In the same year the number of passengers carried upon their railways was in round numbers 205,000,000. That enormous crowd equalled in amount the whole populations of the united kingdoms of Austria, France, Russia, Prussia, Spain, and Holland put together. Among the many objections raised to railways was the contemplated loss of life. People would not believe that great rapidity and safety were compatible, or that passengers could be transported from place to place at the rate of 40 miles an hour without danger to life or limb. Even those who in ordinary cases admitted that travellers must hope to arrive at the end of their voyages without much risk, expressed their opinion that if the smallest derangement of rail, engine, or carriage took place, certain death awaited every passenger. The old stage coachman well expressed the feeling of the

day when he said—"You see, if so be that I upset you into a ditch on the North road, there you are; but if you are upset in a railway—where are you?" Having then referred to the report from the railway department, and how the list of casualties was not as great as was expected, his lordship said that out of the 205,000,000 carried on their railways in 1863, 35 were killed and 53 wounded. Of these 26 were killed by accidents to trains and other causes beyond their own control, and nine men were killed owing to their own want of caution or misconduct. They should allow him to hope that what he had said that night would induce some of them to look more deeply into that great subject, feeling sure that from the study of it they would derive much profit and amusement.

THE LATE GEORGE PETRIE, LL.D., R.H.A., M.R.I.A.

WE regret to have to announce the death of Dr. Petrie, Vice-President of the Royal Irish Academy, and late President of the Royal Hibernian Academy, which took place on Thursday morning, the 18th ult. In the death of Dr. Petrie Europe has lost one of its most distinguished scholars and antiquarians. His accomplishments were varied, as a painter, musician, antiquary, and man of letters. He was, however, principally known to the literary world as an archaeologist, and his name is more particularly associated with his celebrated work on, "The Round Towers of Ireland." Through a lengthened and industrious life he directed all the powers of a singularly gifted mind to what seemed to him the most attractive study—the antiquities of Ireland,—with the object of throwing light upon these periods the authentic records of which have perished, if such ever existed, and the various peculiarities of which can only be traced by the labours and research of the antiquarian. He prosecuted his inquiries with the zeal and earnestness of an enthusiast, and the result of his studies, labours, and observations have been given to the world in many valuable literary productions and papers contributed to the Transactions of the Royal Irish Academy, or left behind him in his inestimable museum, the most remarkable and curious private collection in Europe. There were few departments in literature in which he did not distinguish himself, and display the powers of a vigorous intellect, a refined taste and a thinking, erudite, and observing mind. Ancient Ireland was the source from which he drew his happiest inspirations. With the ardour of a lover he pursued his archaeological investigations under difficulties that would have deterred others less persevering, and he lived to enjoy the satisfaction of seeing his exertions recognised and rewarded, and to feel that he had been useful in his generation. Dr. Petrie competed for the prize medal offered by the Royal Irish Academy for the best essay on the origin of the Round Towers. Probably antiquarians of the present day may not quite coincide with the views of the essayist, but none can deny the painstaking and scholarly manner in which the work was executed. Another prize of the Academy was won by Dr. Petrie for his "Essay on the Military Antiquities of Ireland," proving that the chain of dry-stone monuments of what has been termed "Cyclopean Architecture," marking the progress of a peculiar race in the most remote ages, had been extended into Ireland from Asia Minor, Greece, Italy, and Spain. We find Dr. Petrie next entering upon a more extensive and useful field of historic labour. On Lieut. Larcom, of the Royal Engineers—the Major-General Sir Thomas Askew Larcom, K.C.B., Under Secretary of State for Ireland, of to-day—being appointed one of the conductors of the Ordnance Survey of Ireland, he observed the vast mass of ethnological materials that had been already accumulated in the course of prosecuting inquiries essential to the survey alone, and conceived the idea of employing these in the preparation of a comprehensive memoir, which might at once illustrate the maps by describing the natural history of each district, and exhibit the progress and condition of society in all parts of Ireland. The Government of the day favourably received the design, and Dr. Petrie was appointed to conduct the historical and antiquarian sections. The memoir was regarded as of great literary and antiquarian value, and various portions of it were from time to time communicated to the Royal Irish Academy. He was awarded three gold medals and premiums by the Academy, of which he was so distinguished a member. In 1833 he was awarded a premium of £50 and a gold medal for his work on "The Round Towers of Ireland." In the year 1835 we again find him awarded another premium of £50 and a gold medal for his paper on "The Ancient Military Architecture of Ireland prior to the Invasion of the English;" and in the year 1840 he received the gold medal for his paper on "The History and Antiquities of Tara."

The "Petrie Collection of Ancient Irish Music" is a most interesting and valuable production, and

is of itself sufficient to stamp the author's fame. His collection of antiquities is the most curious and interesting of its kind, containing as it does so many pieces of antiquity identified with owners recognised in history. Amongst these are the bell of St. Patrick—handed down with concurrent evidences of its authenticity to the present day; the crozier of Cormac, son of Cullinan, the king and bishop of the ninth century, the founder of the acropolis on the Rock of Cashel; the "Staff of Murus"—another episcopal baton of the ninth century; the Great Seal of Henry II.; the seals and rings of princes, abbots, and feudal lords; brooches, bodkins, heads, and amulets; the bronze celts and Punic-shaped swords of the Firbolgs; the stone hatchets and flint arrowheads of the Aborigines; and the inexplicable relics of Druidic or Danaanite superstition. This collection was the work of a lifetime.

Dr. Petrie held for some years a literary pension, which his eminent services to his country's literature deserved. The collection of antiquities he has left will doubtless be purchased either by Government or some learned society. In any case it is to be hoped that it will not be lost sight of by those who have so often expressed the desirability of establishing a grand National Museum, of which this would form a splendid nucleus.

BRICK ARCHITECTURE IN LOWER SAXONY.

We have lately in several articles incidentally mentioned the remarkable examples of brick architecture, ecclesiastical and domestic, which are to be found in several of the cities of Northern Germany. It may be as well finally to wind up the subject by some attempt at generalization as to the peculiarities of the style, at least as it appears in the district with which we have been dealing—one which may be described as the north-eastern part of the ancient Circle of Lower Saxony. The brick district of North Germany extends much further than this, and any very wide generalization on the subject would therefore be dangerous. But classified local observations have always a certain value, if only as making a beginning, as starting subjects for examination, as suggesting hints which such further examination may either confirm or confute. We have, therefore, no hesitation in putting together some general remarks on the brick buildings of that particular district. Further inquiry may show how far the same characteristics extend, or do not extend, beyond its limits.

Architectural style, it is obvious, is always much influenced by the material employed. This, in most cases, is the same thing as saying that it is influenced by the nature of the country and the materials which it supplies. It is, of course, always possible to procure materials from a distance; Caen stone and Purbeck marble are found employed in places at a great distance from Caen and Purbeck. But such a practice can never be universal; it can only apply to buildings of unusual importance, where cost is of comparatively little moment. The mass of the buildings of any country will always be built of the materials supplied by the country itself. If a district supplies a good stone, the architecture of that district will be superior to that of its neighbours; a good style of building will be introduced earlier and last longer. The excellence of the buildings of Somersetshire and Northamptonshire, and the late date to which good architecture survived in both counties, is mainly owing to the abundance of good building stone in each. A district where good stone is not found, if not very far from a stone district, may, like the Lincolnshire Holland, import stone from a neighbouring district which is better off. But commonly a district without good stone will be left to its own resources. A poor rural district, especially if well wooded, will continue largely to employ timber both for churches and houses, and its architectural style will necessarily lag behind its neighbours. The western midland counties of England and a large part of Wales will supply instances. There is a lavish employment of wood, roofs attain to a sort of barbaric richness, but ornamental stonework is rare except in buildings of special importance. A richer district in such a case will employ brick as a substitute for stone. An occasional brick building of mediæval date is found in the east of England, diversifying the flint-work of East-Anglia and the timber work of Essex. But, as a rule, an ancient brick church in England is a rare object, and, though we have abundance of brick houses, they are nearly all of late date.

But in the great commercial cities of the district of which we have spoken, brick is the universal material for buildings of all classes. Churches, houses, gateways, town walls, are all of brick. Brunswick, as we have seen, is a stone city; Bremen is half stone and half brick; but in Lüneberg, Lübeck, Schwerin, Wismar, Rostock, and Doberan, brick is universal. It is also the material of such small remains of ancient Hamburg as retain any architectural character at all. Here are materials for at least the beginnings of an induction: and it may be profitable to compare the build-

ings of this region with those of another great brick district in Aquitaine. The buildings of Aquitaine and of Lower Saxony are as unlike as buildings of the same material can be, but the use of the same material has made a certain amount of likeness unavoidable.

The use of brick necessarily involves a certain degree of plainness. Unless stone is mingled with it, it is impossible to produce the rich mouldings, the elaborate tracery and foliage, of mediæval stone architecture. Stone mouldings are cut by the hand; brick mouldings are cast in a mould. It is therefore impossible to give to brick the same freedom and variety which can be given to stone. For his mouldings, his tracery, his foliage, the brick architect is unavoidably confined to a few simple forms. A certain degree of sameness is the necessary result. One or two plain types of window occur everywhere in the brick district of Lower Saxony; attempts at more elaborate tracery are found sometimes, as very conspicuously in St. Katharine's Church at Lübeck, but they are quite exceptional. Hence, as a rule, the brick styles do not attempt very wide windows. In Aquitaine, the narrowness of the windows is appropriate to the climate; but no such reason exists in Lower Saxony. The German architects attempt wider windows much oftener than those of Aquitaine, but the wider they are the worse they are. The brick style never shows to greater perfection than when the windows are many, tall, and narrow, as in a large part of St. Mary's, at Rostock. But, though Germany can show wider windows than Aquitaine, its brick architecture has nowhere anything to compete with the triumphs of the art of tracery elsewhere. The vast pointed windows of England, the magnificent circles of France, are utterly unknown. But it is an ill wind that blows nobody good. If the windows of the brick churches are mostly plain and monotonous, they are at least saved from reproducing the abominable perversions into which Flamboyant tracery ran in other parts of Germany.

From this peculiarity another follows. It is by no means so easy to fix the date of brick buildings as it is of those of stone. Brick architecture clearly did not follow stone architecture in its various later developments. The general use of brick would seem to have come in during the thirteenth century. In the cities mentioned above, there is very little brick work of earlier date, except in Lübeck Cathedral. Most of the buildings are much later than the thirteenth century. But there is an impress of the latter half of that century upon all of them. While the worker in stone, having the free use of his hands as well as of his head, was always inventing one new form or another, the brick artist, working with moulds, kept to the few simple forms which were first introduced. Geometrical and Arched tracery were in use when the brick style came into use, and to Geometrical and Arched tracery the brick style adhered throughout. The Arched tracery, as the simpler of the two, was the favourite. Flowing tracery, Perpendicular, and Flamboyant are unknown; even the *Katharinenkirche* at Lübeck, where the tracery is so much more elaborate than usual, does not get beyond Geometrical forms. One almost wonders, when one remembers the constant intercourse between England and the Hanse Towns, that some observant man did not introduce a little English Perpendicular. The stiffness and regularity of its form would, one would have thought, have quite suited them. But though a stray Perpendicular window or two does turn up at Zürich and at other places where nobody would have looked for it; at Lübeck, where one would have looked for something of the kind, it is not to be found.

It follows, therefore, that there is not much to be learned from these churches in the way of architectural detail or of the succession of architectural styles. They may be said roughly to be all in one style. Even where there is manifest difference of date, where a building has undergone manifest changes or additions, there is commonly nothing that can be called difference of style between the earlier and the later work. The exceptions to this rule are to be found in the few examples where any part of the brickwork goes back to Romanesque times, as in Lübeck Cathedral and in the very curious church of St. Nicholas, at Rostock. There is nothing analogous to that juxtaposition and substitution of different varieties of Gothic with which we are so familiar in England.

Indeed, the architects of these buildings seem quite to have understood that the simplicity and monotony of detail which appears inseparable from the material must be made up for in some other way. And made up it truly is in the general majesty, the amazing height, the varied and elaborate outlines, of these churches. In this last respect they differ in a marked way from the brick churches of Aquitaine. These, with Alby at their head, affect a certain simplicity of conception which would make them admirable models for modern town churches. Alby has neither aisles nor transepts, and therefore no pillars or arcades; it is one gigantic body with mere chapels between the buttresses. But the brick churches of Lower Saxony

revel in the variety of subordinate chapels, transepts, and so forth, which they throw out in every direction. The tall aisleless apse, so characteristic of German Gothic, such as we see at Bern, Freiburg, Dortmund, and, in its highest development, at Aachen, is exchanged, in the greater churches, for elaborate groupings of apsidal chapels, more in the French style, though with distinct arrangements of their own. Nothing can be more striking in this way than the two great churches at Lübeck. The Friars' churches, however, even here, sometimes cleave, as in St. John's at Bremen, to their characteristically simple forms, and, by the oddest caprice of all, several very fine churches, including two of those at Rostock, have flat east ends. But the grouping of chapels at the east end and the addition of chapels to all sorts of unusual places is distinctly the rule. In point of height, the larger churches positively revel. Few interiors anywhere surpass in general effect either the *Marienkirche* at Lübeck or its namesake at Wismar.

It is curious that, while variety of outline is so carefully sought in this way, it is not sought at all in the way most fertile of it and most characteristic of other parts of Germany—namely, the grouping of towers. A single western tower, with perhaps a *dachreiter* or *louvre* over the junction of nave and choir, is the rule, and the great Lübeck churches depart from it only so far as to substitute a pair of western towers. Central towers, eastern towers, side towers, double choirs like Hildesheim, are all unknown. The single western tower, as at Moissac and Alby, seem also the Aquitanian rule, though some of the churches of Toulouse have very fine single side towers. Some of these single western towers, commonly crowned with tall spires of wood and lead, are magnificent structures, and the variety in design is very great. Such are St. John at Lüneberg and St. Nicholas at Rostock. The west front of the *Marienkirche* at Rostock is an indescribable vagary, which, though the opposite to beautiful, it is almost worth going to Rostock to see. The *Marienkirche* at Wismar has a saddleback; the tower of St. Giles in the same city, like Schwerin Cathedral, is unfinished. Doberan has no tower at all.

The houses present a greater variety of external ornament than the churches. But this variety consists almost wholly in the repetition of various Geometrical patterns, wrought commonly in bricks of different colours. The fronts of the houses are generally finished towards the street with what is locally called a *schultergabel*, answering to the *corbie-steps* of Scotland. This, in some of the richest examples, swells into a series of small gables and pinnacles; in others, there are no corbie-steps, but one large gable of the natural shape. But, in all cases, the design rises to a central point, so as to allow a series of blank arcades rising one above the other. A more effective form of street architecture could hardly be devised; still there is something not wholly satisfactory about it. It is unreal; go round the corner and look at the roof, and the *schultergabel* is at once seen to be a sham, no less than the west fronts of Wells, Lincoln, and Salisbury Cathedrals.

These noble buildings, hot churches and houses, are very little known to English antiquaries, and it strikes us that they are not valued as they should be by their own possessors. In England the study of mediæval architecture has fairly made its way; it is established that the buildings of a country are an essential part of its history. Those who do not care for the study themselves fully recognise that there are other people who do, and that those who do so are engaged in a rational pursuit. But very well-informed men in North Germany seem in a manner puzzled that an historical inquirer should take any interest at all in the ecclesiastical and domestic architecture of their cities. And certainly the pursuit of architectural knowledge in those regions is in some respects a pursuit of knowledge under difficulties. A most perverse habit prevails of planting trees close up against the churches, as if on purpose to stand in the way of anyone who wishes to draw them. And in no part of the world does the appearance of an architectural student arouse such amazement. The unlucky artist is surrounded by a mob of unruly children, whom there seems no law or police to restrain. One hears much of the police in the German States, but just when they might be useful they keep themselves hidden. In the Prussian dominions the educational system of which we hear so much seems to provide an everlasting supply of idle urchins, who are always coming out of school and never going in. At Lübeck things are rather better, at Bremen rather worse. At Wismar a kind of martyrdom has to be endured in the form of actual pelting, which makes one think that the local discipline of the cudgel might in some cases not come amiss. An artist must in any part of the world be prepared for a certain amount of annoyance, which he easily learns to put up with. But any annoyance which he may meet with in any part of England or France is a trifle compared with what in this respect seems to be the utter barbarism of the North German cities.—*Saturday Review*.

PERSPECTIVE IN ITS APPLICATION TO ARCHITECTURAL DESIGN.*

IN the following remarks I do not intend to fatigue you with a series of scientific technicalities, but I rather desire to lay before you the results of experience and such practical rules as you will for the most part find useful and sufficient for all ordinary purposes. Nor is it needful for the purpose in view to enter into an abstruse mathematical investigation of the science now under our consideration; that part of it is not only very unentertaining to those who have not advanced far into it but unnecessary. I shall therefore endeavour to explain in a manner as easily to be understood as possible, and by as few rules and examples as will enable you to consider your work in its true bearings in reference to such buildings and other objects as are generally met with in practice; and, by impressing on the mind general principles with the aid of a few hasty diagrams, I hope to be able to make myself sufficiently understood for all practical purposes.

I will here remark that some knowledge of the anatomy of the eye is of great interest and value to the student, as from it the theory of perspective is deduced, but for the present purpose it will be sufficient to bear in mind that all objects of whatever outline and form give off or reflect the rays of light in straight lines; these visual rays are represented by lines supposed to be drawn from the object to be represented on paper to the station point, that is, the eye of the spectator; and if we suppose a horizontal line of indefinite length to be drawn through that point we shall find that all the horizontal lines of the object appear to converge to two points in that line, one on either side, and then to vanish, whence these points are called the vanishing points. Bearing in mind that the horizontal line is always at the exact height of the eye of the spectator, whether he be standing on the ground or raised above, on the top of a house, a tower, or hill. On the application of these facts depends all perspective when considered in connection with the vertical and perpendicular lines of the object.

If the object to be drawn be an existing building, for instance, the eye will give with more or less accuracy the points to which its horizontal lines vanish; but if, as is the case to which our attention is chiefly directed, the building to be drawn only exists on paper, the process to be followed is simply this—take the plan of the building or thing to be drawn in perspective and assume the position from which it is to be viewed, that is, fix your station point, draw lines from the extreme angles of the building to that point, which is that of the spectator, and also a line from the nearest angle to the same point, draw a line perpendicular to the last and continue it indefinitely on each side; finally, from the station point draw a line parallel to each of the visible sides of the building and the points of contact with the perpendicular line will be the vanishing points of the respective sides.

In the diagram (No. 1) A B, B C are the sides of the building, A and C its extreme angles, B its nearest angle to the station point F, D F and F E the parallels to the two faces of the building A B and B C, D E the vanishing points on the perpendicular line to B F.

If the building have a rounded angle, or is cut away, or indented at the angle, the two sides may be produced until they meet, and the problem then becomes the same as for a right angle, and so for every modification between it and a close approximation to an actual curve, keeping in mind that the vanishing points in every case must fall on the horizontal line.

We will now consider the diagram already described in its relation to the elevation of the building proposed to be put in perspective; upon the horizontal line we will suppose a point which we will call the point of sight, or that corresponding with the angle B in the diagram No. 1; across the horizontal line at the point nearest the eye of the spectator or station point draw the perpendicular F B (diagram No. 2), taking care that the intersection of the two lines shall be the proper height above or below the base of the building in reference to the position from which it is seen, then from the top and bottom of this line draw two other lines to the vanishing points D E corresponding to the top and ground line of the building, upon these two lines again mark off with perpendiculars the two sides of the building or extreme angles A C, and the result will be B F, the nearest angle to the station point or spectator; A C, the most distant angles; B E F and B D F, the top and bottom lines in their respective angles in relation to the vanishing and station points, so by this operation the object given by plan in diagram No. 1 will have been put in perspective. And, supposing there are several buildings or parts of one building of the same or similar size, mark them off with other perpendicular lines to the horizontal line, as in the first instance; if there are windows or other openings to be shown mark off the space the first ones occupy, and by lines drawn from the bottom and top of

each kind to the vanishing points we get them all the same *perspective* height and proportion throughout the entire work. Thus one of the sides of the building will have been represented, and the same process must be followed for its counterpart.

We will now suppose it is required to raise a gable or pediment, and in order to do this correctly we must first find the true perspective centre of the side of the building upon which it will stand; for this purpose it is not necessary to refer to the plan (diagram No. 1), indeed I would in most cases advise you to avoid doing so, because you can obtain the same results with equal accuracy in a less roundabout way. First draw two diagonal lines, one from each corner of the building, G H and I K, from the ground to the top, and then where these two lines intersect, draw a perpendicular, L M, indefinitely, and by setting off the proposed height on the produced line, B, or nearest angle, and drawing a line from it to the vanishing point, E, its point of intersection with L M will give the true perspective apex and shape of the gable: and it may be remarked here that this simple rule is of the utmost importance, for many of our greatest painters appear to have been quite unaware of it, and made, consequently, many very ludicrous mistakes, for you will find by referring to many of the works of Teniers, Albert Durer, and several others, that they scarcely ever drew a gable end to a house, and that they did not put it off the centre either leaning too much to one side or the other, giving the idea of falling, which no doubt they never intended. It does seem certainly strange that men so gifted should have made such oversights, especially as in some instances they are so glaring that they create a feeling of pain in the mind of the observer, who is frequently drawn aside from the contemplation of their exquisite drawing and coloring by being compelled to fix his eyes upon what cannot be felt to be other than a great blemish; and yet it appears to be an error that almost all unacquainted with the rule are liable to fall into. You will see, therefore, that I am right in endeavouring to impress this very simple rule upon your minds, and in order to carry out the idea still more fully we will take as another example, a square tower with a spire, in which case the violation of the rule would be worse if possible than that of the gable; suppose then that diagram No. 1 is the plan of the tower, we will commence by marking off the height on the nearest angle as in the last case, drawing the horizontal lines to the vanishing point as before, through the perpendiculars of the two extreme angles, and having drawn the diagonals on each face as before described, the point of intersection gives the perpendicular centre of each face of the spire (presuming it to be a square one), and the perpendicular line A B (diagram No. 4) half way between the two extreme angles of the tower will pass through the apex of the spire; and should it be required to find the vanishing lines of each face of an octagonal spire without complicating our work by referring to the plan, the lines so required will be obtained by joining the two points *f, g*, representing the centre of each face of the square spire already described; and this principle will hold good if applied with a little care in finding the lines required for each of the other sides of a polygonal figure of almost any form.

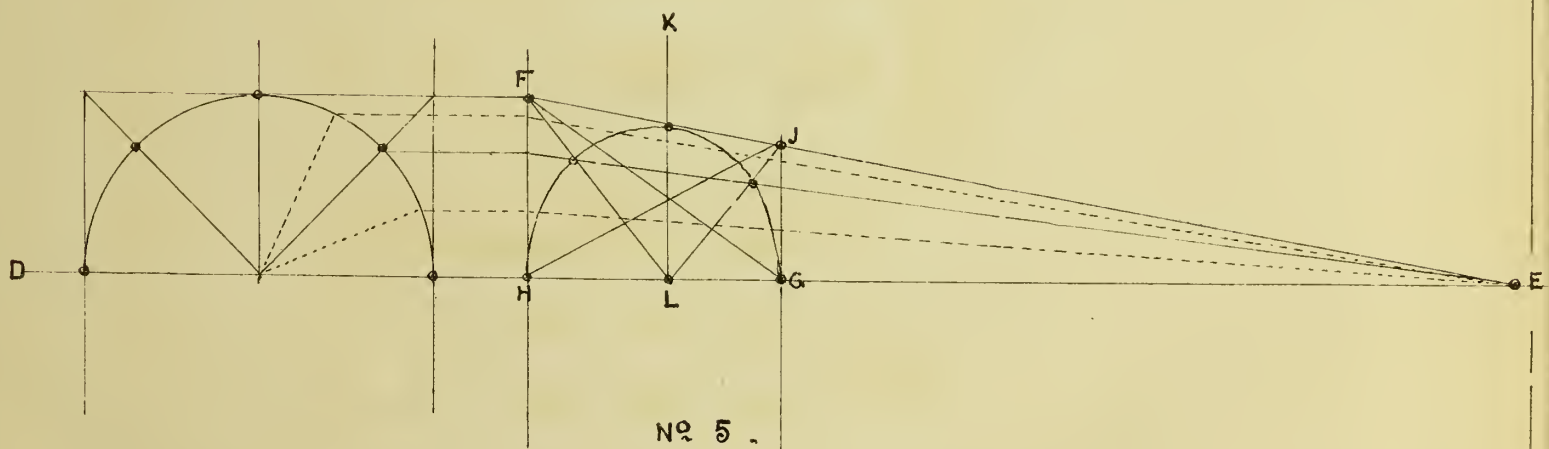
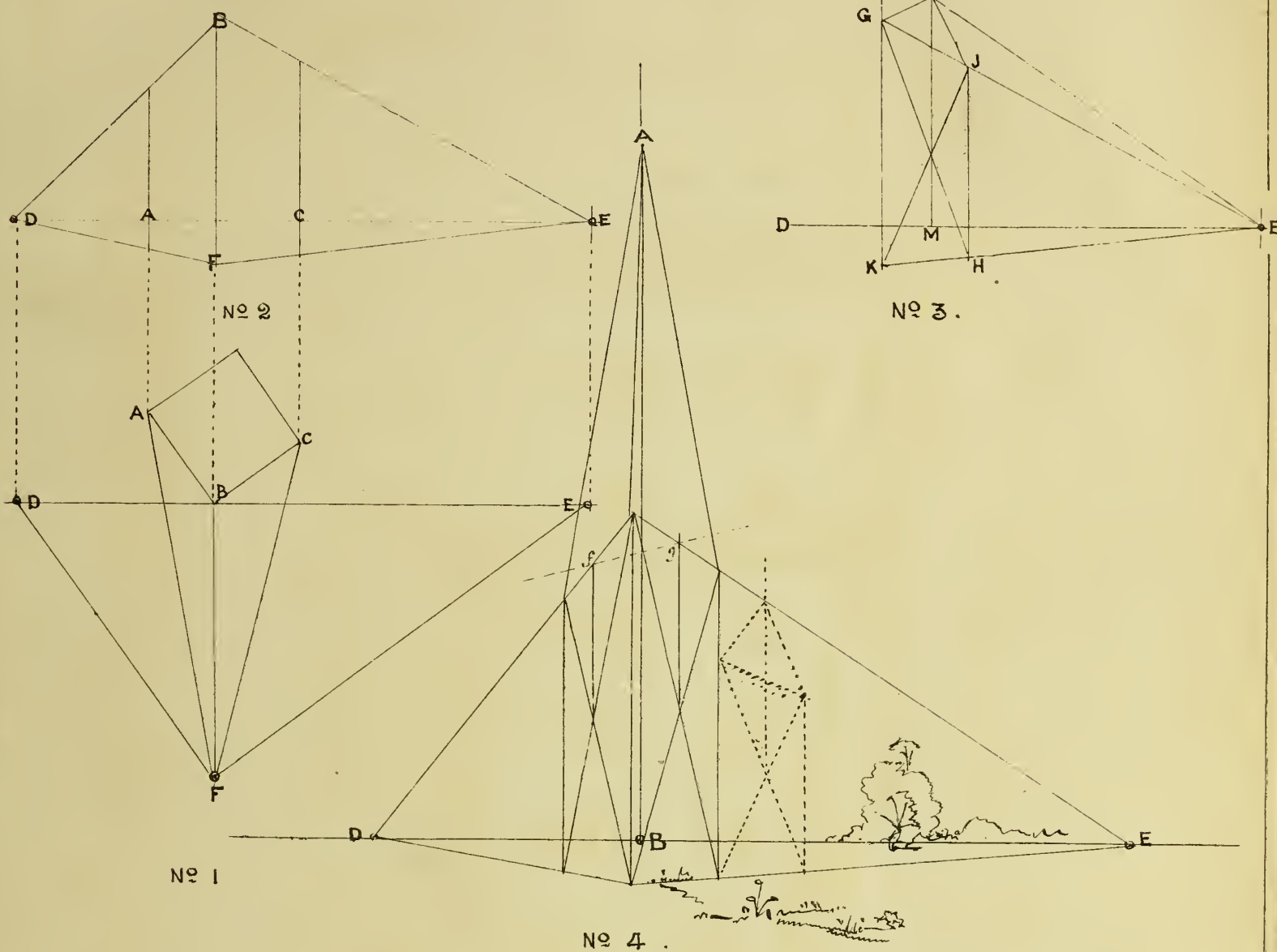
Another matter worthy of remark is the difficulty of drawing the arch in perspective, even when the true centre and size of the opening may have been obtained; but for almost all practical purposes I have found the following rule to suffice. Presuming the arch to be a semi-circular one, draw its width and height as if treating a rectangular figure; then, finding its true perspective central line by the diagonals, F G, H, I, draw the perpendicular K L, and from the point of intersection with the springing line, assumed to be also on the horizontal line, draw other diagonals L F and L I, which will pass through the shoulders of the arch at points dividing the curve into four equal parts, and when the true geometrical form of the arch has been ascertained and laid down as a guide, almost any number of points in the curve may be obtained by increasing the number of the diagonals with sufficient accuracy for all practical purposes; and this rule with slight modifications may be applied to arches of almost any form.

We have now briefly considered the first and most simple elements of the science of perspective, I will therefore say a few words on what I think you will agree with me in deeming rather important in its bearings on architectural design.

You are fully aware of the necessity, of correctly delineating a design upon paper geometrically, and whilst doing so I am sure your thoughts have wandered more or less into the realms of fancy, as to its probable effect when executed; but thinking on such a subject without some knowledge of the art of perspective, or, in other words, seeing things as they really will appear, too often ends in disappointment. I do not mean to infer that this power of anticipating the probable effect will cure a bad design, but rather that it will most likely prevent its being made at all. I, therefore, wish to bring before your notice some simple facts, tending to make the drudgery of office work somewhat less disagreeable than it usually is.

* Paper read to the Class for Architectural Study, Royal Institute of the Architects of Ireland, on the 11th ult., by E. Trevor Owen, Fellow.

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PERSPECTIVE.

Diagrams referred to in Address to Students' Class, R.I.A.I.

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Whether we contemplate the broad expanse of the boundless ocean, the undulating landscape, the lofty mountain, or the constructive works of man, each are seen subject to the laws of perspective. Take, for example, the mighty forest, stand immediately in front of some giant tree; it appears comparatively uninteresting, but look at it in connection with twenty, fifty, or a hundred others, and the impression, at one glance, is increased more than as many fold. Now, if we could only see one at a time we should not experience much sense of expanse and grandeur, but seen in what we call perspective, every object seems changed from what we may positively know it to be, and changed for the better. We will suppose the trunks of two of these trees to be columns, only I must ask you to imagine one square and the other round, of equal diameter, drawn *geometrically*, the one could not be distinguished from the other, unless by the help of a bit of artistic shading; draw each, however, as it appears, *i.e.*, in perspective, and what grace do we perceive in the one as compared with the other—the square one turning out a heavy clumsy looking object, whilst the round one may have all the proportions of the Corinthian shaft. Again, take a cube, an octagon, or a cylindrical figure; draw them as before geometrically, and they will each appear pretty much alike, but consider each in relation to its actual appearance when occupying some important position in the composition of an architectural design, and what a change will have apparently taken place. I must leave you to draw your own inference from this, considered in reference to its bearing upon large works designed in the usual way, and what I wish particularly to convey is this—that I think we should always consider at least two elevations at the same time, or the result will, in nine cases out of ten, be other than was intended or hoped for; for the one side may appear very satisfactory, well-proportioned, &c., perhaps founded on the very best examples, and yet if treated as by itself without duly considering certain little accessories, such, for instance, as its principal projections and recesses, the result will be a partial, if not a total failure, and next to actually having the design modelled in relief I know of no nearer approach to truth than what is afforded by a judicious use of the rules of perspective. For I think it bears such an important part in all the architect has to consider, apart from the mere utility of his design, that a projection cannot be made, an opening pierced, or a set of mouldings grouped with any degree of certainty, without some knowledge of it being brought to bear upon the subject, for his work when executed and subjected to the various impressions conveyed by the laws of optics must be viewed according to its rules.

For example, we will suppose ourselves engaged in designing a building containing several distinct general features or masses of outline both as regards plan and elevation, presuming the whole range to be 100 feet long, with a centre and two wings, each having considerable projection, and that at the junction of the central projection with the main range, a dome or other large mass is to be erected, and that the whole work can only be seen from a com-

paratively near station point, the whole work may appear exceedingly satisfactory as a geometrical elevation, but when tested by the rules of perspective it would very likely be found that, 1st, one or more of the projecting wings partially or entirely obscured the intermediate recessed portion or considerably more of it than the designer intended, and in the case of the dome or other elevated portion upon which perhaps the greatest care had been bestowed, it might probably be found that its best features hardly appear above the gables or the ridge of the roof. On the other hand, by keeping in mind whilst at work the conditions under which the building will be seen, that is, the principal station point, together with the surrounding objects already existing. The mistake of putting in elaborate and expensive details, only to be seen by going round a corner in the one case, or by being carried up in a balloon in the other would, to a great extent, be avoided.

You will perhaps suppose that to discover all this at the outset would be difficult and unnecessary; my answer to which is, try in perspective for yourselves the effect of any given work upon which you may chance to be engaged under similar conditions to these above alluded to, and ten to one you will not only experience the desire to alter the proportions of the most important masses as well as the principal details, but very likely the entire arrangement in reference to the grouping; nor is the discovery of all this a difficult matter, when even the first principles of the art under consideration are mastered, as the general outline as well as the chief details may be thrown into perspective in a very short time for mere lines representing the main features, such as the most projecting angles, the sky-line of gables, pediments, &c., the deepest recesses and even the main cornice may all be found sufficiently accurate as to afford such an idea of the whole as will enable the designer to avoid many points in themselves totally unnecessary to the composition, and to alter others he may deem objectionable.

In conclusion I will ask you to suppose ourselves in search of the best station point from which to view St. Paul's Cathedral; you get a good one as you approach from Fleet-street, but what you wish to see you find yourself too much in front, and getting nearer, the dome begins to vanish behind the western pediment—perhaps you are enamoured with the beauty of the details on a still nearer approach; but still what you are in search of you do not find to your satisfaction, namely, such a point of sight as from which the greatest amount of its general mass, and at the same time its most important subordinate parts and details can be taken in at one view, and at last you may find that such a one can only be obtained by making use of one of the river steamboats, or crossing over one of the thronged bridges to the opposite bank, or possibly by ascending "the Monument." Now all these various views of a building as yet existing in the mind of the architect only, can be tolerably well defined upon paper by the judicious use of perspective as will enable him to suit his design to the circumstances of the site in reference to the position of the spectator or station point.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of the Royal Institute of British Architects, held on Monday, 22nd of January, 1866, A. J. B. Beresford Hope, Esq., M.P., President, in the chair. After the usual preliminary business of the evening, the President presented to Professor Thomas L. Donaldson, past president, Emeritus Professor of Architecture at University College, London, a gold medal, bearing his portrait, struck at the instance of his professional brethren, to commemorate his earnest and zealous services in promoting the study of architecture. In an eloquent address the learned president referred to the distinguished services which Professor Donaldson had rendered to the cause of architecture in this country during his lengthened career, and stated that it was mainly through his personal exertions that this Institute first took complete form and action in the year 1835, under the presidency of the late Earl de Grey, with Mr. Donaldson as the Honorary Secretary, and who at the request of the council read a very able and comprehensive paper, pointing out the various ways in which the members of the profession might make themselves useful to the cause of architecture. Fifteen years subsequently, the President added, Mr. Donaldson was presented by the same distinguished nobleman with the Royal Gold Medal of the Institute. Coming down to the period when Mr. Donaldson was appointed Professor of Architecture in the University College, London, the President spoke of the distinguished manner in which the duties of that important position had been discharged by that gentleman, he having during his period of office educated

400 students in architecture, and in conclusion, he expressed a hope that although Professor Donaldson had at his advanced period of life felt it due to himself to resign that appointment, it was not to be regarded as an intimation on his part of his intention to retire entirely from that sphere of usefulness, study, and research which had characterized him from earliest life until the present day.

The President, amid the plaudits of the meeting, then handed the medal to Professor Donaldson, who, labouring under feelings of strong emotion, expressed his high sense of the distinguished compliment that had on this occasion been paid to him by his professional brethren, whose friendship and esteem he so highly appreciated, an honor for which he said he felt that the humble services he had rendered to architecture were wholly inadequate. The learned Professor then gave an interesting sketch of his career from early life, pointing out the difficulties which in his younger days existed in the pursuit of studies cognate to architecture, and even architecture itself. He adverted with pleasure to the humble part which it had been his privilege to take in the formation of the Institute, which he had always felt would be a great means of promoting their art, and he rejoiced in having been permitted to witness its present high standing and efficiency. Mr. Donaldson then resumed his seat, amidst long-continued applause.

Mr. John W. Papworth, fellow, then read a very interesting paper respecting the roofs of the hypæthral temples of Bassæ and Ægina, after which a short discussion took place, in which Professor Donaldson, Mr. Nelson, V.P., and Mr. Papworth, Fellow, took part, and the meeting then adjourned till Monday, the 29th inst., when it was announced that papers on the Dutch Church, Austin Friars (from notes made by the late William Lightly, Fellow), and notes on the Churches of Anvergne, in France, would be read by E. J'Anson, Fellow.

WATER.

The purity of the water supplied to towns and mansions for dietetic purposes has occupied much attention for several years. The impregnation of the water by organic matters of the nature of sewage does not only lead to the presence of such organic matter in the water, which at times can be readily detected by the senses of sight, and taste, and smell, but in the greater number of cases the water appears clear, possesses a good agreeable taste, and exhibits no smell. At such a stage the organic matter has in good part been so thoroughly decomposed as to lead to the formation of nitrates which are dissolved in the water. In this state the water will be found to be robbed of much of the oxygen gas, which is dissolved in all fresh and healthy waters. And, besides being unwholesome from the presence of the organic matter and nitrates, and the diminution of the oxygen gas in solution, the water, from the presence of the nitrates, has acquired the power of acting more or less powerfully on lead, so that it becomes dangerous to transmit it through lead pipes or store it in lead cisterns. Water, therefore, when contaminated with organic matters, is liable to be doubly unwholesome from the impurity present, and the power which that impurity may confer upon the water to dissolve lead to a dangerous extent. A most ingenious apparatus for the distillation of water from sea water, or even from partially foul water, has been patented by Chaplin, of Glasgow, and this distil-aerator not only admits of the distillation of purer water, but also supplies the air to the water which is found dissolved in all wholesome waters. The importance of such an instrument in ocean-going steamers and sailing vessels, and in all positions where there is a practical difficulty in procuring or providing good water, can hardly be over-estimated.—*Dr. Macadam.*

THE CHEMISTRY OF NATURE.

(Continued from page 27.)

IN accordance with this explanation, and in furtherance thereof, I now invite your attention to the manifestation of the power of gravitation in producing the tides in our ocean. As the moon passes over the earth's surface a tide of water follows it. This ascending of the water is occasioned by an attractive power which is exerted between the earth and moon, and which draws the pliable water towards the line of direction in which such power is always acting. This power, which causes tides, can be proved to be purely mechanical, because the water is drawn up as water, and it descends again as water without undergoing any chemical change; and this power between the earth and moon acts through more than 236,000 miles of space that is free from all kinds of matter, for the moon being 237,000 miles from the earth, and the earth's atmosphere extending but 60 or 70 miles from its surface, and the moon's atmosphere extending a still less distance from its surface, it follows that there must exist, between the outer boundaries of their respective atmospheres, more than 236,000 miles of space, in which there is no atmosphere, and consequently no matter; but even if the atmospheres of the earth and moon really blended together they could serve no useful purpose to the power of gravitation. We use the term "a rope of sand" to represent the utter worthlessness of some proposed plan. A rope of atmospheric air would be equally useless to sustain the many millions of tons of water which are drawn to a height of several feet above the mean level of the ocean. It is known that the gravitating power of the sun acts sometimes in conjunction with and sometimes in opposition to the gravitating power of the moon in producing tides in the earth's ocean, but as it would lengthen my subject to notice the details of such action, and believing I shall make myself sufficiently understood by confining my remarks to the moon's action, I shall content myself by so doing. In again referring to the action of the moon in producing tides, no one believes that the water which ascends in the earth's ocean comes from the moon. It is, therefore, certain that the power from the moon which draws it up must first be separated from the other elements which compose the body of the moon, and that after being so separated it acts upon the waters in the earth's ocean to form tides as already described. We not only know that the power of gravitation is so exerted between heavenly bodies, but we also know that chemical power is constantly acting to effect the changes which are continually going on over the surface of the sun to produce the light which we see on the sun's disc. Let us, therefore, once clearly understand that a portion of the chemical power, so acting over the sun's surface, is separated, like gravitating power is separated from the moon and like power is separated from steam, and that it then becomes free from the other ingredients in which it was generated; and after passing through the space which exists between the sun and earth it so acts upon the materials composing the earth's atmosphere as to induce them to inflame and supply the earth's surface with similar light and heat to those which exist on the surface of the sun.

It will, then, be clearly understood how, under the influence of this solar chemical power, the earth's surface is excited to supply vapours and gases to the atmosphere; how, under this same solar power, gases are continually being formed in the atmosphere; how the jets of hydrogen so formed become ready for spontaneous combustion by combining with the inflammable vapours with which the atmosphere is charged; and how, this taking place as it does in connection with a sufficient supply of oxygen gas, spontaneous combustion ensues, and that light and heat which enliven and warms the earth are produced; for as such inflammable gases are expended in the atmosphere by combustion, as already stated, the latent caloric which they previously contained suddenly changes its state and becomes sensible heat, and it having been proved that during the combustion of any given weight of hydrogen gas it imparts the immense quantity of 23,400° of sensible heat to a like corresponding weight of water, it necessarily follows that during the combustion of sufficient quantities of inflammable gases in the air to clothe the earth's surface with the light it receives, such an amount of heat must be generated with the light as would supply the earth with that quantity of heat which has hitherto been supposed to come from the sun.

In the foregoing explanation of the rise and fall of tides, for reasons already stated, I have confined my remarks to the gravitating power of the moon; and in explaining the action of the chemical or ignipotent power which induces light upon the earth's surface, I have confined my remarks to the sun; and it is well known that in the case of the rise and fall of tides the sun exerts gravitating power in common with the moon. And if the explanation I

have given be clear regarding the sun's ignipotent power, it will be equally certain that when chemical power from the sun is inducing inflammation in the inflammable matter in the moon's atmosphere, so as to induce light on that half of the moon's surface which is opposite the sun, that as such flame-covered surface of the moon comes opposite the earth free ignipotent power would also leave the moon, and by acting upon the inflammable matter in the earth's atmosphere produce that light therein which is called moon-light. The same also with the ignipotent power from the stars in producing what is called stellar-light, each heavenly body exerting its chemical or ignipotent power upon the others in proportion to its size and distance from them. If the law holds good that between heavenly bodies action and reaction are equal both with the mechanical and chemical states of power, we may with confidence look for some results, apparent in the heavenly bodies themselves, to confirm the theory I am advocating; and when the attention of astronomers is once fairly directed in search of such results I feel confident they will not be disappointed. I will endeavour to bring forward one or two.

According to Sir Isaac Newton's law, that action and re-action are always equal and opposite, it must follow that if the sun acts mechanically and chemically upon the earth's surface, and also upon the surfaces of all the other planets and satellites in the solar system, to draw inflammable matter and induce an ocean of flame—light—over that moiety of each one of them which is situated opposite the sun, they must so react back again upon the sun that each one would draw inflammable vapours and gas, and produce its own respective tide of flame on that part of the surface of the sun which would be in the line of direction opposite to the planet itself. Under this condition of the solar system, while only that one half of each planet, which would be opposite the sun, would be clothed with flame, the whole surface of the sun itself, in consequence of being surrounded by planets, would be enveloped in flame just as we know it to be.

Again, as the sun and planets are all in motion, and the planetary tides of flame, more than 80 in number and varying in intensity and size, are also in motion over the sun's surface, the fixed mountainous districts on the surface of the sun must sometimes be crossed and covered by these moving planetary tides of flame, and at other times such mountainous lands must be situated in the valleys of flame, with the high tides thereof surrounding them. Under this condition of circumstances the sun's surface would present those variations in the quantity of flame—light and shade—which are seen and described by astronomers as "spots on the solar disc," and which have been a great puzzle to philosophers from the time they were first discovered. If the spots we are now noticing were produced by any fixed local cause, they would appear and re-appear at regular intervals of time, which would be regulated by the sun's revolution on its axis; but such is not the case. During one revolution of the sun a spot will appear on a particular part of his surface 50,000 miles in diameter; during a second revolution the same spot will appear not larger than the diameter of the earth—about 8,000 miles; and during a third revolution it will disappear altogether. This is exactly what would result from a mountainous district being, at the time of the first revolution, situated in a valley of flame surrounded by planetary high tides of flame; at the time of the second revolution in a smaller valley surrounded by high tides of planetary flame; and at the time of the third revolution covered with a high tide of planetary flame. In this way the variations in the quantities of flame would produce those appearances of light and shade called "spots" on the sun's surface, which variations would be continually undergoing change, and could never be twice alike, because the planets and particular parts of the sun's surface would never be a second time in exactly the same relative position with regard to each other. These planetary tides of flame over the sun's surface, from being of different sizes and continually combining with and separating from each other, produce those twinkling, scintillating appearances which are seen thereon, and also on the surfaces of the fixed stars, which, according to the views of astronomers, are also suns surrounded by planetary systems; but such twinkling appearances are not seen on the surfaces of the planets, because the oceans of flame which cover them are of a more uniform and steady description than those planetary tidal flames which cover the fixed stars.

From all I have advanced this evening we may deduce that the atmosphere is the earth's reservoir, in which aqueous and other vapours are held, suspended by atmospheric electricity, in store for use. It is the earth's great gasometer, in which inflammable and other gases are held in store for use; and it is also the earth's great laboratory, in which the ingredients which compose the atmosphere are

secreted into rain and dew to irrigate and refresh the earth, and light and heat to enliven and warm it, the whole of the processes going on to produce them being controlled by that element power, which the Almighty has diffused throughout His creation. Under the mechanical department of this power the motions and relative positions of each world are regulated with regard to the motions and relative positions of all other worlds; and under the chemical department of this power, inflammable matter is expended and renewed over their respective surfaces to rule their days and govern their nights, except with suns, for with the inhabitants over every part of their surfaces it is always day.

I shall be happy to further explain any point that I may have touched upon and left ambiguous, or to meet any objections that may be raised against the views I have been advocating. To prevent misconception I would state that I claim the following amongst the points I have advanced: 1st, the classifying of the three elements which compose all natural existences, and the three states in which each one of those elements manifests itself in nature; 2nd, the agency of atmospheric electricity in attracting aqueous and other vapours from the surfaces of the earth and ocean and sustaining them in the atmosphere; 3rd, the gradual decrease over the earth's surface in the quantity of atmosphere from the equator to the north and south poles, caused by the centrifugal force of the earth's diurnal motion; 4th, the chemical union of the two sorts of electricity with the decomposed ingredients of water to form oxygen and hydrogen gases; 5th, the generation of large volumes of gas in the atmosphere itself the principal cause of winds; 6th, aqueous vapour collects in the atmosphere and falls on the earth as rain, hail, snow, and dew, when it loses the attractive power of such atmospheric electricity as is expended in the air in chemically combining with decomposed water to form gases; 7th, the eccentric combustion of compound inflammable gases in the air the cause of lightning and meteors and thunderbolts, and the concussion of the currents of air which rush in to fill the vacuum occasioned by such eccentric combustion of large volumes of inflammable gases the cause of thunder; 8th, the more uniform and general combustion of compound inflammable gases in the air the cause of all the light which falls on the earth's surface, whether it be what is called solar or lunar or stellar, and the sudden change of latent caloric into sensible heat during the combustion of such inflammable gases in the air the cause of all that heat which the earth receives, and which has hitherto been supposed to come from the sun; 9th, the reaction of chemical power upon the sun's surface, and the planetary tidal flames produced thereby, the cause of "spots" on the sun's disc.

In stating that the sun does not supply the solar system with light and heat, I no doubt surprise some of you very much, because from your very infancy you have not only been taught to believe that the sun is the source of light and heat to the earth, but the evidence of your own senses has also appeared to confirm your scholastic learning. Permit me to remind you that this is not the first instance in which your senses have misled you, and not only you, but also the great bulk of mankind, from the earliest ages of recorded history. We read how the soothsayers, astrologers, and magicians of old used to deceive the people, and we also read how the people in every part of the world are still deceived by them; but perhaps of all deceivers that the world of mankind has had to contend with the sun himself has been the greatest. Before the days of Copernicus and Galileo every person gave the sun credit for being a great traveller; as you see him sometimes represented, in some of the ancient fanciful representations of the constellations, with a blazing car and fiery steeds, travelling as a ruling monarch, with his brilliant train of moon and stars as his followers, and with these he was supposed to journey not less than 285,000,000 miles per day.

It is to Copernicus and Galileo that philosophers are indebted for exposing the mistake they were all previously labouring under, and proving that the apparent travelling of the sun, &c., was produced by the diurnal rotation of the earth on its own axis. But for thus confining the sun in the centre of the solar system he (Galileo) was confined as a prisoner for five years at Sienna and Arcetri. To learners of philosophy, who are always ready to embrace truth and wisdom, Galileo continued to repeat, and they continued to believe, that the apparent rising and setting of the sun, moon, and stars, and their apparent daily motions round the earth, were all occasioned by the daily revolutions of the earth itself; so that, notwithstanding Galileo's release from prison, in the minds of the lovers of truth and learners of wisdom, the sun has been kept in confinement, as the centre of the solar system, ever since, where he is likely to remain imprisoned for life, or, in other words, during the term of his natural existence.

But notwithstanding it is 233 years since Galileo exposed the deceptive character of the sun in leading philosophers to believe him to be a great traveller he has, up to this day, continued to deceive them in the belief that he is such a very liberal benefactor as to supply all the planets and satellites in the solar system with all the light and heat that they receive. In addition to the remarks which I have already submitted to your consideration, it is my intention to advance additional evidence to prove that no light or heat has ever been transmitted from the sun's surface to any of the planets or their satellites, and that every heavenly body, whether it be a sun, planet, satellite, or comet, supplies itself with all the light and heat it receives, and that they all pay back to each other an equal amount of such sustaining power as they receive in their respective conditions in the great system of creation.

For the purpose of clearing the ground as we proceed I shall now attempt to expose an erroneous theory, commonly received and taught, but which nevertheless forms a great obstacle, not only in the way to a clear view of my theory, but also in the way to a clear understanding of the true science of vision. I allude to that theory which teaches that all visible objects are seen by means of rays of light, first emitted or reflected from such visible objects, and then, after passing through the crystalline lens of the eye, impinging on the retina to form the images of those objects; exactly in the same way as different coloured rays of light from a magic lantern impinge on a white surface to form the images we see represented by those very amusing instruments. If objects were really seen by means of rays of light from them impinging on the retina of the eye, one moment's reflection would be sufficient to convince any one of the fallacy of the theory I am advocating, because as we can see the sun, moon, and stars it would be evident that light must come from them to render them visible. As the magic lantern has been commonly made use of for the purpose of illustrating and proving the supposed truth of the theory of vision in question, I will now refer to that instrument for the purpose of illustrating and proving the fallacy of that theory. If a common magic lantern, with an ordinary oil lamp inside, and a very small negative* image, so painted on the slide as to allow a distinct clear margin of light to be seen formed round the negative image when it is placed in the lantern, be used for the purpose of throwing a positive image from the magic lantern on to a surface of white cloth. In the absence of all light, except that issuing from the magic lantern, a very enlarged representation of the small negative image will be seen to be formed of light issuing from the magic lantern and impinging on the white surface of cloth. The difference in size between the small negative image painted on the magic lantern slide and the large positive image represented on the white cloth is occasioned by the rays of light issuing from the magic lantern being greatly diverged in consequence of having to pass through a convex lens. In this case we know that such positive image is actually formed of different coloured rays of light. If, when such image is so delineated, a lighted candle be placed immediately in front of the same, the light from the candle will so overpower the various coloured rays of light impinging on the surface of white cloth as to obliterate the positive image. If the candle be extinguished, the white cloth surface removed, and a mirror be substituted in its place, it will be found that the various coloured positive image will appear on the surface of the mirror in very faint, almost white, light, but the small magic-lantern-slide negative image will appear to be clearly represented in the mirror. If the candle be re-lighted and introduced immediately in front of the mirror it will again overpower and obliterate the positive image, which we know to be formed of rays of light, but not so the apparent representation of the magic-lantern-slide negative image, that still remains as clearly and vividly represented in the mirror in the presence of the lighted candle as it does in its absence. How, in the mirror, is the apparent representation of the small negative image to be accounted for? Certainly not by rays of light, for we have the most conclusive evidence, in the large positive image, that the rays of light which form it do not travel in parallel straight lines, but in diverging lines; and, again, we have the most positive evidence to the same effect in the fact that we cannot obliterate the representation of the small negative image by overpowering it with rays of light in the same way as we can those images which are known to be formed of rays of light. Therefore, the only inference that can be drawn is, that the representation in the mirror of

the small magic-lantern-slide negative image is not formed of rays of light according as we are taught to believe by the theory in question.

We may also infer that the representation of such visible objects as we see in mirrors during every-day life are not produced by rays of light, but by other means, which I shall notice presently. To proceed with the magic lantern. If we remove the mirror and again allow the positive image to appear on the white cloth surface, and afterwards substitute a black cloth surface for the white one, for the purpose of testing the relative powers which white and black possess to represent an image formed of rays of light, the difference in the vividness of the same image, which will be seen on the two surfaces, will be so apparent that I need not add one word to prove that the white surface possesses by far the greatest amount of power to represent images which we really and truly know to be formed of rays of light. If we obtain two pieces of glass painted only on one side, the one black, the other white, we shall, upon trial, further find that black surfaces possess the greatest power and white surfaces the least power to represent such images as the small magic-lantern-slide negative image which we have so recently been noticing in the mirror. If the pieces of glass are alternately held in front of the face so that the representation of the features can be seen in each piece of glass, it will be found that under the same circumstances in all other respects the features will be much more clearly and visibly represented in the glass with a black ground than they will be in the glass with a white ground, which is just the reverse of what would be the case if the representation of the face were formed of rays of light in the same way as we have seen the positive image, from the magic lantern, formed on the white cloth surface. Every-day life teaches us that a black surface is the worst to reflect light, and a white one the best; and that all coloured surfaces increase their power to reflect light as they approach white, and lose their power to reflect light as they approach black. According to these well-known facts if the image of the face were formed on the glass by means of rays of light, first reflected from the face on to the glass, and then re-reflected back from the glass on to the retina of the eye, then I say that the glass which is painted white ought to represent the image of the features much more vividly and clearly than the glass does which is painted black, which is the very reverse of the fact, and a more convincing proof that the representation of the features, which the glass enables a person to see, is not produced by means of rays of light, according as we are taught by the theory of vision in question, cannot, I should imagine, be required.

Again, the retina of the eye on which all visible objects are represented is not white, but is backed by an absolutely black membrane, which is the very reverse of what would have been placed there by our Creator if the representations of visible objects were formed thereon by rays of light, in the same way as positive images are formed on the white cloth surface by means of the magic lantern. A piece of common glass first placed on black cloth, or in the crown of a black hat, and afterwards on white cloth or white paper, will answer very well to show the difference in the powers of black and white to represent visible objects. Not only does this apply to objects when viewed in close proximity to the eye, but also to all distant objects, a black object being always much more conspicuously seen in the distance than a white one. In practice this is so well understood by the Coastguard department of the Government that all boats belonging to the Preventive service are painted *white*, not *black*; because a white boat, even in the night time, when there is very little light over the surface of the water, is very much less visible in the distance than a black one would be. How can this be accounted for according to the theory of vision which supposes that rays of lights must be reflected from the surfaces of all visible objects, and delineated on the retina of the eye, to form the images of those objects before they can be seen? If a black boat in the distance or any other black distant object, absorbs all or nearly all the rays of light that impinge on it, it cannot reflect such light and absorb it at the same time. If the theory of vision in question were true, that vision depends on reflected light, nothing can be more clear than that the white boat in the distance, or any other white object, ought to be more clearly visible than black ones, because such white boats, &c., would reflect nearly all the light which impinges upon them, which reflected light is supposed to be transmitted to the eye to produce vision. From these facts nothing can be more certain than that objects are not seen by rays of light; quite the contrary. It is also certain that the clear and distinct visibility of distant objects will be in proportion as they are capable of absorbing, not reflecting light, from which we can only infer that during the absorption of light

some influence is released from it which excites the sense of vision on the retina of the eye; but more on this point presently. If time permitted, I could bring forward much additional evidence to prove the fallacy of the received theory of vision; but if I have advanced sufficient to prove that the representations of objects are not formed of rays of light reflected from them on to the retina of the eye, and on mirrors, &c., it is quite enough for my present purpose, because it will then be evident that it is not necessary that light should come from the sun, moon, and stars, to the earth in order that we may see them. The question that here presents itself, if the representations of visible objects are not formed of rays of light, in what manner are they produced? This is a problem for the optician to solve rather than the chemist; still, a few remarks thereon may not be quite out of place on the present occasion.

I have already stated the fact that power is continually being produced and as continually being separated from various existences in nature. It is separated from steam, running water, and wind, to drive machinery, ships, railway trains, &c. We are continually separating it from ourselves for a great variety of purposes. It is separated from the sun to ignite inflammable matter over the surfaces of the earth and other planets; and it is separated from the moon, &c., to produce tides in the ocean. With these facts before our eyes, and knowing that before objects can become visible they must either be saturated or clothed with light, it may be worth considering whether power may not be liberated while light is being absorbed by such objects, and whether the power so liberated may not so act on the retina of the eye, and on mirrors, as to induce vision. To many, at first sight, the idea I have suggested to account for vision may appear very visionary. Still, there are facts connected with science which the suggested idea may serve to explain, and they may, upon consideration, serve to strengthen the idea. For instance, we are told by photographers that if a picture be exposed to light for some time, then taken into a dark room, and a piece of sensitive paper be immediately placed in front of the picture, such a photographic effect will be produced on the sensitive paper that a copy of the original picture can be obtained from it. This fact certainly proves that during the time the picture is exposed to light it imbibes such power from light as enables it to affect the sensitive paper after all light is taken from it. If, under such circumstances, a picture can so imbibe and store up power while it is being liberated from light, surely power must be continually liberated from all light while it is being absorbed by all objects. It is, therefore, more than probable that all ordinary photographs are produced by power, after it has been liberated from light, rather than by the action of light itself. If so, it follows that visible objects may be photographed on mirrors, and on the retina of the eye, by the power which becomes liberated from the light which such visible objects absorb. Notwithstanding much more may be advanced to the same effect, it is not my intention to do so now, but to rest satisfied with stating that it is my opinion that vision is produced in the way I have suggested, and that I do believe that when the reality of the existences and extent of liberated power are once clearly entertained and understood, it will open a way to the explanation of many at present confessedly difficult and mysterious points connected with science, for we have not as yet gathered all the fruit from the tree of knowledge.

THE LIFFEY—THE QUAYS.

THE various plans proposed for the purification of our Anna Liffey have been from time to time brought before our readers. Our Corporation should take steps to have some of these comparatively inexpensive proposals carried out before the ensuing summer. Amongst many complaints from the ratepayers in the neighbourhood of the river, the following appeared in the columns of a morning contemporary during the past week:—

"**SIR,**—Early in November, in connection with a number of other inhabitants on the quays, I signed a petition to the Corporation for the purpose of their taking steps to have the Liffey purified. After lying, I understand, some two months on the table, it was read and referred to a committee, which, it is to be feared, means shelving the question. As spring approaches such would be the time to take action in the matter, and not to have it postponed indefinitely. Last summer the occupiers of the quays got a sample of what may be expected in the next, as it is an admitted fact that those who can sleep elsewhere, and that rents in consequence have fallen one half, of which my house is an instance, and yet I am annually a loser. What I would respectfully suggest is, that

* The terms "positive" and "negative" images being introduced into photographic language, are here used merely for the purpose of more clearly explaining the two images connected with the magic lantern, and are not intended to embrace a more extended meaning.

all the occupiers of houses on both sides the quays from the King's Bridge to the points of the walls should combine and form a committee, by whom the city could be canvassed, and a pressure brought to bear by petition on the Corporation they could not resist, so as to get rid of this pestilence which sooner or later, if not abated, will tell its own story, is greatly to be feared. The bugbear of expence is only moonshine. Under the new and extensive powers which the Corporation have assumed, which thereby can be spread over a number of years, although probably the present occupiers or the next may not see ended.

"JAMES TAYLOR."

We are glad to observe that at the meeting of the Municipal Council, held on the 26th ult., a special committee was appointed to look after this most important of all sanitary matters connected with our city. The committee were empowered to offer a premium of £100 for the best plan, which should be sent in before the 1st of May next. Our river-side tax-payers, as well as the citizens generally, will have to put up with the effluvia from the river for another summer.

Another discontented taxpayer writes as follows respecting the state of the roadways in the city:—

"SIR,—I hope it is not too late for the Ballast Board to introduce a clause into their bill to give them charge of the roadways along our quays, at least from Carlisle Bridge to the end on either side eastwards. The roadways are now, particularly along Sir John Rogerson's-quay, in a most dangerous and scandalous state; in fact, it has to be seen to be believed. *We are taxed heavily for keeping the streets in proper order*, but along Sir John's quay I can say that for the past ten years I am sure £5 has not been expended. What we want in our Corporation is *workers*; we have plenty of *talkers*. If the Ballast Board had charge of the roadways we would have them in good order, as we see how they spend the money, but we merely hear how the Dublin Improvement (?) rate goes. "A TAXPAYER."

"P.S.—If the £800 about to be expended on the City Hall was spent in repairing the roadways on the North Wall and the south quays, it would be giving the ratepayers better value for their money."

THE O'CONNELL MONUMENT.

THE Committee met on Wednesday the 17th ult. In the course of the proceedings the secretary read the following letter which had been addressed to Mr. Foley, together with that gentleman's reply:—

"DEAR SIR,—We are instructed by the sub-committee of the O'Connell National Monument appointed to communicate with you, to acknowledge the receipt of your letter written on the 14th of October last. It has received matured and careful consideration, and we are instructed to state that, recognising yourself as occupying a position amongst the foremost of living sculptors, our earnest desire has been to obtain from you a design based on the printed conditions already forwarded. We do not wish to restrict your genius by any unreasonable provisos in the production of a grand composite work, not greatly exceeding in cost our present available means—£10,000. We are even desirous of giving you a general superintendence over all its parts, execution and erection, until it be finally completed. We have to state, however, that, being desirous of satisfying the reasonable requirements of our resident Dublin sculptors and artisans, who have a laudable anxiety to exercise their native talent and skill under your direction on a monument of which, we trust, all may feel proud when completed, the sub-committee wish to ascertain from you if an arrangement can be made so as to fairly reconcile interests which in our opinion do not conflict with true artistic ideas. The sub-committee feel desirous of an early personal interview with you, trusting that such would lead to a more definite understanding, and to a removal of any difficulties now in the way of a complete accord between your views and those of the committee. Please to say what is the earliest time at which you can gratify the committee by such an interview."

"London, 11th Jan., 1866.
"DEAR SIR,—In reply to your inquiry of the 8th instant, I have the pleasure of stating that the effects of my late accident are fast decreasing, and that my medical attendant is of opinion I shall be able to visit Dublin before the end of the present month. Be so good as to inform the sub-committee of this.
"J. H. FOLEY,"

NOTES OF NEW WORKS.

The town of Wexford is rejoicing over a work just now completed, consisting of a school-house within a well walled and planted plot of about one and a-half acres, situated on the high ground close on the northern side of the town. It appears that a townsman the name of Tate emigrated to America about eighty years back, and by exertion there realized a handsome independence, and returning to his native town for the ending of his days, left about five or six thousand pounds towards founding a free school for 30 youths, and other laudable purposes for the benefit of Wexford. By some delay this sum accumulated to full double the original amount, and the rector, mayor, and others, as appointed by will trustees for the time being, commenced the good work of the school about eighteen months back according to plans submitted to them by Mr. S. Symes, architect, of Dublin. Some delay, however, arose in the

midst of a fair progress by the insolvency of the contractor, a Mr. O'Connor, of Wexford, to the great inconvenience of all parties; but, fortunately for the trustees, his securities have acted their part, and the building is now completed in a creditable manner. It consists of a two story dwelling in simple Italian fashion, showing red brick and bold projecting eaves on the principal fronts, having school-room, classroom, dining-hall, master's-room, and lavatory, on the ground floor, with dormitories, &c., over, and kitchen, pantries, stores, and yards with all requirements, in the rear. There is a separate entrance for master and pupils, as also to an infirmary and nurses' room, cut off distinct from all other parts. Ample playground is provided, as also a garden and fair share of lawn with evergreens distributed. The site has the appearance to us of a healthy bank with cheerful look-out, affording opportunity of proper drainage and water supply.

The Public Works Loan Commissioners are about to grant an extra loan to carry out proposed harbour works at Carrickfergus, Co. Antrim.

A new parish church is about to be erected for the parish of Kilbride, near Doagh, Co. Antrim, from the designs of Messrs. Bell and Marsh, High-street, Belfast.

A manse is to be erected at Knockbracken, near Newtownbreda, Co. Down, from the design of Mr. Hastings, Great Victoria-street, Belfast.

The Belfast York-street Flax Spinning Company have declared a dividend of 15 per cent. per annum, besides adding £30,000 to the reserve fund, which is now £59,000.

Mr. John Hunter, of Queen's College, Belfast, has published in the *Journal of the Chemical Society* an account of his experiments on the absorption of vapours by charcoal, a property which had been observed by Priestley, Scheele, and other chemists. Mr. Hunter's object was to obtain greater absorptions than any previously known by using charcoals made from very dense and hard woods, such as logwood, ebony, and boxwood. He found that the charcoal made from the shell of the cocoon had by far the greatest absorbing power. It is very dense and brittle, the pores are quite invisible, and, when broken, the edges present a semi-metallic lustre. Having examined the absorption of a large number of gases, he extended the inquiry to the absorption of vapours, and gives the result in tables. He found that the absorption of vapours by charcoal terminates in a much shorter time than in the case of the permanent gases.

There were but seven tenders for the construction of the new waterworks, Belfast. Three were selected for consideration, each of which was within the estimate of Mr. Lanyon, C.E.

The Lunatic Asylum at Letterkenny is now completed, and ready for the reception of patients.

The Newtownlimavady Spinning and Weaving Company have commenced the erection of their new factory in the County Derry.

MISCELLANEOUS.

M. Von Born, a banker in Dortmund, lately made excavations, or rather borings, in the neighbourhood of Frankenhäusen, in the hope of finding copper, and in doing so has discovered the largest and most beautiful caverns in all Germany. The two largest are 800 and 600 feet in length respectively, and about 130 feet in breadth, and 40 to 50 feet in height. The third cavern is also several hundred feet long. The three caverns contain in all nine pools of clear water. A great many beautiful slabs of gypsum hang from the roofs.

The ceremony of laying the foundation-stone of the Rochdale New Town Hall, at which Mr. Bright promised to officiate, has been postponed till the 31st prox.

There are 4,155 (German) miles of telegraphic wires spread over Austria, with 340 offices.

The annual meeting of the Belfast Harbour Commissioners was held on Thursday the 25th ult. The receipts for the year amounted to £52,281 3s. 6½d., and the expenditure, including interest on loans, to £41,591 13s. 6d. The income in 1865 was greater by £3,885 2s. 4d. than in 1864. The tonnage which entered the port in 1865 was 1,111,158 tons, against 1,020,037 tons in 1864, and the quantity of coal imported during the year was 538,530, nearly 40,000 tons more than in the previous year.

It is proposed to erect a lighthouse on a part of the coast to be afterwards determined, and also a building in connection with the Royal Dramatic College—to the memory of the late Mr. G. V. Brooke, tragedian, who was lost in the steamship London, on his way to Melbourne.

In accordance with a decree issued by the Government of the Czar, the decimal system of coinage has been adopted in Poland.

At the Coolastra mines, Co. Monaghan, the miners have cut a very fine vein of lead ore at 216 feet from the surface, this being the deepest part of the mine. The lode is nearly two feet wide, and of excellent quality; stones or rather lumps of solid lead, upwards of 40 lbs. weight each, have been taken out. This is another proof of the value of Ireland's mines.

A school of architecture has been opened at Moscow as a branch of the school for painting and sculpture in that city. It is endowed by the Government for sixty pupils.

The abstract of meteorological observations for the year 1865 has been issued from the Ordnance Survey Office, Phoenix Park. These statistics are of considerable interest, as they furnish evidence, collected with the utmost care and skill, illustrating the atmospheric conditions which especially affect agricultural pursuits, and have an important bearing on the general prospects of the country. The following particulars, which we extract from them, will serve to show the variations of the climate during the past year:—The highest barometer during the year was 30.827, on December 15, at 9.30 a.m.; wind S.W. The lowest barometer during the year 28.540, on January 14, at 9.30 a.m.; wind W.N.W. The highest temperature in air during the year was 83.9, on June 22nd. The lowest temperature in air during the year was 20.4 on January 20. Rain fell on 178 days, being nearly six months of days on which rain fell. The greatest rainfall in 24 hours was 1.355 inches on the 10th of August, with wind S.W. The prevailing wind was W. for 99 days; total pressure, 147.58 lbs.; average, 1.44 lb. per square foot. The strongest wind was S.W. on the 30th December, the pressure being 36.00 lb. per square foot.


TENDERS.

Additions to the premises of the Belfast Charitable Society. W. J. Barre, architect. Quantities supplied by Mr. E. P. Gribbon.

	Main Building.			Extension of Female Wing and Corridors.			Total.		
	£	s.	d.	£	s.	d.	£	s.	d.
Thomas McKeown	2149	1	6	687	3	9	2999	0	0
H. and R. Fulton	1959	19	0	866	0	0	2836	5	3
H. and J. Martin	2375	0	0	428	0	0	2825	19	0
James Ross	2260	0	0	530	0	0	2790	0	0
M'Laughlin and Harvey	2230	0	0	520	0	0	2750	0	0
W. B. M'Master	1910	0	0	830	0	0	2730	0	0
Henry Stewart									

* Accepted for main building and corridors, without extension of female wing, at £2140.

SPECIAL NOTICE.

 We again request that Subscribers will kindly remit to the office the amount of Subscription for current year (reduced to Six Shillings per annum—by post, Eight Shillings).

Subscribers and Advertisers who have been furnished with Accounts from the Office of this Journal, will please forward the amounts, with as little delay as possible, to the Proprietor.

TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

Books for Review in this Journal should be forwarded to the Publisher, at the Office, 42, Mabbot-street.

All Communications respecting the DUBLIN BUILDER, should be addressed to Mr. PETER ROE, 42, Mabbot-street, to whom all payments for Subscriptions and Advertisements must be made.

The back numbers of this Journal, from its commencement in January, 1859, can be had on application at the office, 42, Mabbot-street, Dublin.

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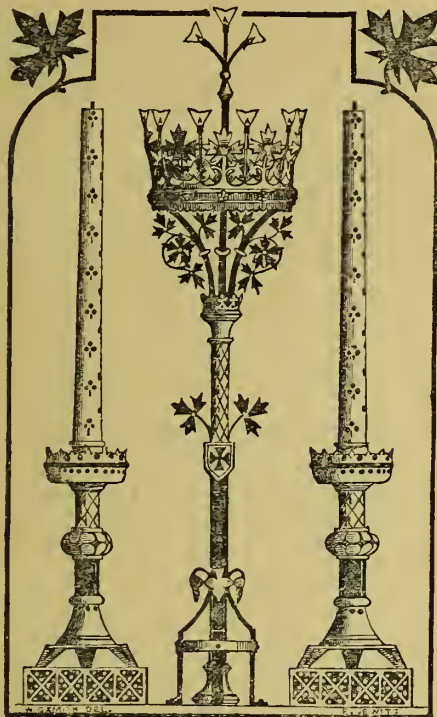
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(THE SACKVILLE LANTERN.)

GREGG AND SON beg leave to introduce to the notice of the public a Lantern for indoor or outdoor use which they have recently patented. Before proceeding to detail its qualifications they will briefly advert to those in present use.

Public Lamps are generally encased in clumsy metal frames, which obscure the light and cause large shadows to fall on the ground; the top of the lamps have usually clear panes, which allow the rays to pass upwards and are lost in the air, leaving only one half the light for use.

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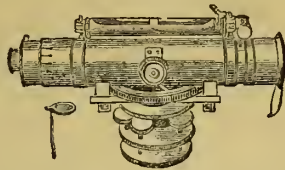
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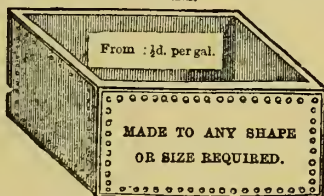
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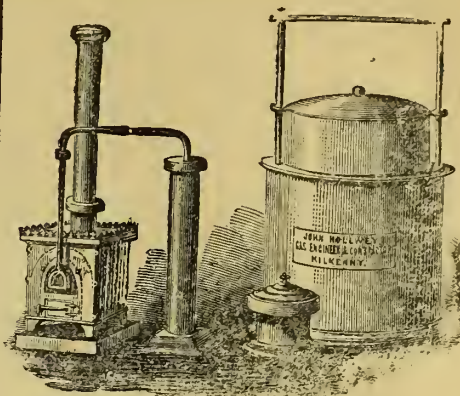
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1861	360,130	135,974	1,811,905
1863	522,120	143,940	1,566,434

Fire and Life Losses paid by the Company since its establishment to the end of 1863 } £2,940,457.

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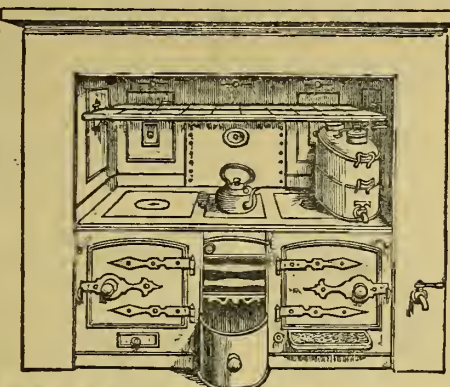
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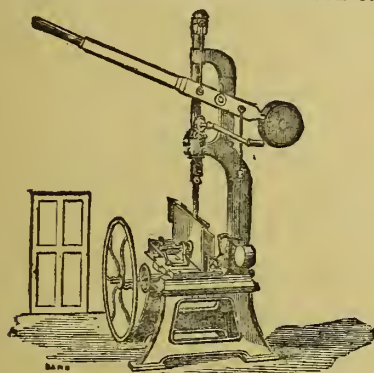
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TESTIMONIALS.

From WILLIAM TITE, Esq., M.P. for Bath, and Architect of the Royal Exchange, London.

House of Commons, 2nd March, 1864.
 DEAR SIR,—In reply to your note, I beg to say that I have used both the sorts of Cement manufactured by your firm, and that of Messrs Francis & Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good. I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant,
 Messrs. White & Son. (Signed) WILLIAM TITE.

From R.O. MINNIE, Esq., Surveyor to Board of Ordnance, London.
 War Office, Pall Mall, London, S.W.,
 3rd March, 1864.

GENTLEMEN,—In reply to your request, I have much pleasure in stating my favourable opinion of the quality of your Portland and other Cements, which have been extensively used in the Public Works connected with the War Department at home and abroad, especially in several of the fortifications now being erected in this country. On all occasions within my knowledge the quality has been equal to that of any other manufacturer, and has given great satisfaction.—I am, gentlemen, your obedient servant,
 (Signed) R. O. MINNIE, Surveyor.

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This Stone is now largely used in Ireland for the ashlar fronts of Public Buildings, Noblemen's Mansions, cut stone dressings, interior columns and arches of churches, dressings of schools and villas, and is well adapted for every purpose to which cutstone is applied.

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L., G., and Co., will be happy to furnish Architects, Builders and others with list of prices at the Quarries, free on board, and freight to any port in the kingdom.

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THIS JOURNAL is the recognised organ of the Architectural and Engineering Professions in Ireland. It carefully details all matters pertaining to Building and the Constructive and Decorative Arts, and chronicles the transactions of Scientific and Literary Societies.

After some consideration, it has been resolved, at a sacrifice, to reduce the price of this Journal to THREEPENCE for each Number, trusting that ere long the benefit of the change will be reaped in an increased circulation and a greater field of usefulness.

It is a matter of the deepest gratification to the promoters of the DUBLIN BUILDER to learn, as they do in many quarters, that the gradual improvement in the management, and more especially in the Illustration department, has given much satisfaction, and they have now to state that the reduction in price will not be followed by any falling off in the value of the paper, but by redoubled exertion to render it still more worthy of the support of the public in the Eighth Year of its existence.

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FEBRUARY 15, 1866.

1ST & 15TH
OF EACH MONTH.

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NOTICE TO BUILDERS.

THE ECCLESIASTICAL COMMISSIONERS
FOR IRELAND, on or before the 22nd day of February, 1866, will receive Proposals for

WORKS TO BE EXECUTED AT THE CHURCHES OF
SHIRCOCK Co. Cavan.
BALTYMACORMACK Co. Longford.

According to the Plans and Specifications, to be seen in the hands of the resident Ministers of the Parishes.

The lowest Proposal will not necessarily be accepted. Each Proposal to be forwarded sealed, prepaid, and addressed thus:—

"Proposal for Works at the Church of
"The Ecclesiastical Commissioners for Ireland, Dublin."

BOARD OF PUBLIC WORKS.

NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be received up to the hour of 12 o'clock, noon, on the 28th of FEBRUARY, 1866, for BUILDING, FURNISHING, and ENCLOSING

A NATIONAL SCHOOL HOUSE at GLENOGUE, near Mallow, in the County of Cork, according to Plan and Specification to be seen at the House of Mr. Waters, Dromore Cottage, Mallow.

Each Proposal is to be for a lump sum, but must be accompanied by a separate Detailed Estimate giving Quantities and Prices, and should be endorsed "Tender for National School House at Glenogue."

The Printed Form on which Tenders must be made can be had where the Plan and Specification are exhibited.

N.B.—Persons tendering should send in testimonials from some respectable persons in their locality, as to their character and skill as workmen, unless previously known to the Board.

By Order of the Board,
EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 5th February, 1866.

PORT OF DUBLIN CORPORATION.

NOTICE TO BUILDERS.

THE Port of Dublin Corporation will receive Tenders from competent persons for the Erection of a NEW DWELLING adjoining the Light-house on the Tuskar Rock, off the coast of Wexford, according to Plans and Specifications to be seen at this Office between the hours of Eleven and Three o'clock each day.

Each Tender to be for one lump sum, accompanied by detailed lists of quantities and prices, by which that sum has been computed, on Printed Forms, which will be supplied at this Office.

Tenders are to be delivered by post, prepaid, sealed, and endorsed "Tender for Tuskar Dwelling" at this Office, not later than Twelve o'clock, noon, on WEDNESDAY, the 21st February, 1866.

The Corporation will not hold themselves bound to accept any or the lowest tender.—By Order,

W. LEES, Secretary.
Ballast Office, Dublin, 26th January, 1866.

BOARD OF PUBLIC WORKS.

NOTICE TO CONTRACTORS.

SEALED TENDERS, addressed to the Undersigned, will be received up to the hour of 12 o'clock noon, on the 1st of MARCH next, for the CONSTRUCTION of

A PIER and OVERFALL, at KILKEEL, in the County of Down, according to Plans and Specification to be seen at this Office.

Each Proposal should be for a lump sum, and must be accompanied by a separate Detailed Estimate, giving Quantities and Prices, and be endorsed "Tender for Pier at Kilkeel."

Both Tender and detailed Estimate should bear the Name and Address of the Proposer on the back.

Printed Forms for Tenders can be had at this Office.

N.B.—Persons Tendering should send in Testimonials as to character and competency, unless previously known to the Board.

By Order of the Board,

EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 9th February, 1866.

• If this be not attended to, the Board cannot return detailed quantities to the unsuccessful parties.

NOTE.—There is a quantity of Stone Materials on the site for this work—such portions thereof as may, by the Board's Engineer, be considered fit for use, will be available for the contractor.

DUBLIN, WICKLOW, AND WEXFORD RAILWAY.

NOTICE TO CONTRACTORS.

THE Directors are prepared to receive Tenders for the Supply of THE FOLLOWING ARTICLES, for One Year, from 31st March next, viz:—

No 1—Iron;	No 9—Cotton Waste, Wick-
" 2—Iron Castings;	ing, &c.;
" 3—Brass Castings and Tin;	" 10—Cloth and Carriage
" 4—Steel, Files, &c.;	Trimming;
" 5—Paints, Oils, &c.;	" 11—Carriage Furnishing;
" 6—Burning Oils, &c.;	" 12—Glass;
" 7—Rope, Canvas, Bags, &c.;	" 13—Leather.
" 8—Brushes, Brooms, and	
Mats;	

Forms of Tenders, with Specifications and Conditions, lie for inspection at the Office as at foot, and copies may be had on application.

It is particularly requested that tenders may embrace all the Articles specified in the Form.

Sealed proposals, marked "Tenders for Stores," must be lodged with the undersigned on or before the 1st MARCH next.

E. W. MAUNSELL, Secretary.

Office, 48, Westland-row, 6th Feb., 1866.

MESSRS. EARLEY AND POWELLS beg to announce that Messrs. John Hardman and Co., of No. 1, Upper Camden-street, have resigned the business of Artists, Sculptors, Church Painters, and Metal Workers, in their favour.

Earley and Powells have added to the above mentioned business the Painting and Staining of Windows for ecclesiastical and domestic buildings, under the management of Mr. Henry Powell, who conducted the Stained Glass Department of J. H. and Co., Birmingham for many years.

Mr. Thomas Earley is the only Church Decorator living who was taught his profession by the late A. Welby Pugin.

E. and P. being thoroughly practical men in each Department, are enabled to supply real artistic work at a moderate cost. They, therefore, respectfully solicit the patronage of the Clergy and Gentry of Ireland.

CAMDEN-STREET WORKS, DUBLIN.

TO ARCHITECTS AND GENTLEMEN HAVING MAN-
SIONS IN COURSE OF ERECTION.

HOGAN AND SONS, Stucco Plasterers, General Cement Workers, Modellers, &c., 168, GREAT BRUNSWICK-STREET, DUBLIN, beg leave to state that they are prepared to undertake Contracts in the above line. Ornaments for Cornices & Centre-Pieces for Ceilings supplied. FRONTS OF HOUSES done in Portland or Roman Cement. Materials supplied.

COUNTRY ORDERS strictly attended to, and first class workmen sent to all parts of the country.

N.B.—Pattern Cornices enriched, on view at the Establishment.

SHEEPHOUSE LIMESTONE QUARRIES, DROGHEDA.

FOR Samples of the above Stone, the Proprietors direct the attention of ARCHITECTS and BUILDERS to the new Union Bank, College Green, Dublin, the Lime Stone Dressings of which were prepared and furnished exclusively from this Establishment.

For Prices, &c., apply to

A. & N. HAMMOND,

Sheephouse Quarries, or Office, John-street, DROGHEDA.

AUCTION OF WOOD GOODS.

JOHN MARTIN and SON will SELL BY

AUCTION, on THURSDAY, the 22nd of FEBRUARY, 1866, at their Timber Stores, NORTH WALL, a large and varied assortment of Baltic and North American Timber and Deals, consisting of

18,000 Pieces St. John Spruce Deals, all fresh, 9 to 28 ft. long.
12,000 " Lower Port Deals.
3,000 " Quebec Spruce Deals, first and second quality.
500 " Red Pine Timber.
270 " Yellow Pine.
400 " Crown and Best Middling Memel.
200 " Sundswall.
50 " Ash.
30 " Oak, square and flat.

Sale to commence at One o'clock.

JAFFRAY BARCROFT, Broker and Measurer.

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(ESTABLISHED 1858.)

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(By order)

JAMES N. McNEILL, Secretary.

Belfast, January 23, 1866

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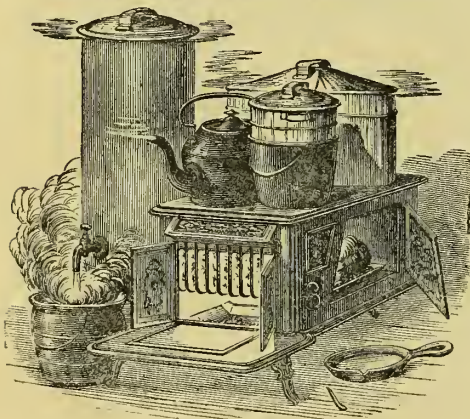
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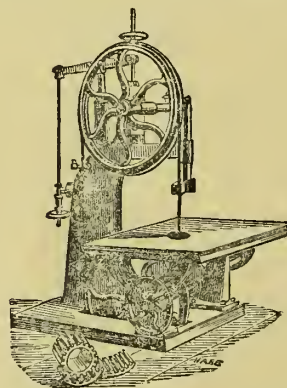
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** **POWIS, JAMES, & CO.,** invite all who are thinking of Putting Down a **MOULDING** or **FLOOR BOARD PLANING MACHINE** to see their **NEW PATENT FOUR CUTTER MACHINE**.

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THE PATENT UNIVERSAL CHIMNEY HEAD.

This Chimney Head has been designed for the prevention of Smoky Chimneys and down Draughts. The top is open, and the numerous side apertures are so placed as to guide the wind upwards, as it strikes the head from any quarter, thus creating a strong current, and assisting the exit of the smoke through the top. The same apertures give ready egress to the wind on all sides in case of its striking downwards from above, and thus greatly diminish the danger of its passing down the chimney.

Price in Zinc	23s.	Kitchen size	32s.
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VOL. VIII.—No. 148.

THE MASONIC HALL COMPETITION.



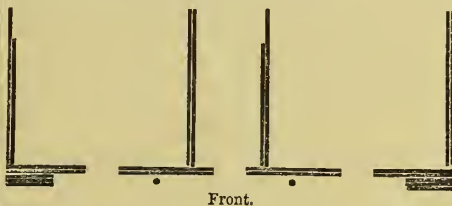
O long a time had elapsed since designs were sent in in competition for the proposed Masonic Hall in Molesworth-street; so much of change, and so many matters of other interest had come upon the scene in the local architectural world in an intervening period of nearly six months, that when the committee announced some ten days ago what their decision was, and that the plans were open to inspection, nearly all interest which the contest had for the competitors had died away, and the tardy announcement was so far fortunate that it fell upon a somewhat apathetic audience, not disposed to discuss the question with that amount of rancour and hostility which it seems the inevitable fate of all competitions to produce. In one respect we can feel for the disappointed competitors rather more than in other cases, and it is in that this competition has failed, we think, to leave to the authors of the rejected addresses tangible grounds for that precise amount of grumbling and angry vituperation which is a very great consolation to even the most amiably disposed of architects, under the bitterness of defeat. Not that we would venture to say that this competition has been so wholly fortunate as to furnish no just grounds of complaint; on the contrary we consider the action or inaction of the committee during the last six months, and the retention of the unsuccessful designs for so long a period is a very plausible grievance, and more especially when it is understood that the selection of the architect was made some time before the public announcement of the result. It is not competent for any public committee, however respectably constituted, consistently with a character for honorable dealing above reproach, to retain *any* designs for a single hour under their inspection after they have virtually made their selection. We cannot but regard it as a grave, however inadvertent, mistake on the part of the Masonic Committee, by delaying so long over the consideration of these plans after their decision was come to, to lay themselves open to the merest shadow of presumption that an improper use might be made of the unsuccessful designs in borrowing from them any "wrinkles" which they might happen to afford. To retain designs deliberately for a purpose so dishonorable is, we need hardly say, an act of which we know this committee to be wholly incapable; but when this grievance No. 1 is followed up by No. 2, that the public have not been permitted to see the successful design in its *original unaltered state*, we think the committee may be charged with at least two injudicious acts. It is no reflection on the most immaculate of characters to suggest to its owner that the true way to preserve it is to be above suspicion, and in the same way we feel we can run into no danger of being disrespectful when we venture to hint that these acts to which we have referred are open to the possibility of misconstruction, and would have been better avoided.

The successful competitor, as all our readers now know, is Mr. Edward Holmes of Birmingham, from whose success in the Masonic Hall of that town we predicted an excellence in the design for this one in which we cannot say we have been disappointed. The selection has been made, we have been told, wholly on the grounds of superior excellence in planning and arrangement as adapted to the wants and mysteries of the brotherhood, an unfathomable depth of argument into which we the uninitiated are unable to pierce, and we at once yield the ground to a skilled witness who tells us it is so, receiving the dictum in the most unquestioning faith. Not viewed in this light—or rather darkness—to the eye of the Gentile it cannot be said to present any points exhibiting superior ingenuity in planning over some of its less fortunate rivals, and in some respects of which we may be permitted to judge, such as the lighting of the coffee-room, library, and board-room, has points of unquestionable inferiority. The area of some of the principal apartments in this design are (in or about) as follows, from which our readers who take sufficient interest in the matter, may satisfy themselves as to the sufficiency of the accommodation provided, by a comparison with the instructions furnished to architects:—

	Super. ft.
Grand Lodge Room	2,840
Royal Arch Room	836
Prince Masons' Room (about)	850
Grand Encampment (not asked for in instructions)	836
Great Dining Room	1,554
Smaller Dining Room	500

The coffee and reading-room is one and the same apartment, and is situated on the ground floor, together with the board room and secretaries' offices; it is about 18 feet wide, and runs from front to rere.

The exterior is a quiet Italian design, divided into three stages. On the ground floor stage there is a Doric porch, with coupled columns of no extraordinary character. In the width the building is divided into three bays, having a wide pier composed of angle pilasters, with a niche between them on each stage at both ends of the façade; and, as the portion of the front available for fenestration (to use an old fogey expression) is thereby contracted, and the stages are not high, and the triple division corresponds with the division walls, in the interior the result is one small window each to the board-room and library. We append a type illustration of our meaning:




In the uppermost stage a Corinthian order is used, and the whole crowned by a pediment the entire width of the front, in which is a striking Masonic device. A note appended states that the design is to be much modified in execution so as to reduce the cost, a statement which does not look as if in this respect very strict compliance with the instructions has been enforced.

The perspective view of the exterior is most effectively and cleverly tinted, as are also views of the principal apartments. The interior of the Dining-hall is a very pleasing design, although not of a strikingly original character. It is a composition of engaged Corinthian columns with a coved and groined ceiling with lunettes, springing over the entablature, and a flat coffered ceiling. The only objection that can be made to the handling of the design is,


that the Corinthian columns support nothing, and look as they are used for ornament on the walls only. The other interiors are treated with a semi-Gothic character which is not unpleasing.

We have designedly omitted to enter into any detailed description of the plan, for viewed broadly there is no very striking distinction to be observed in general arrangement in this respect in the majority of the designs. With the exception we believe of two plans only, that by "*Experiar*," and an alternative one by "*Ecce quam bonum*," a central entrance has been adopted, the dining halls and grand lodge room have been placed at the rere, one over the other or *vice versa*, and as a natural consequence a very great similarity in the disposition of the other apartments is the result. It is in the more or less economical distribution of the same apartments that any great distinction of merit is to be drawn. Preeminent in respect of economy and excellent arrange-

ment may be cited the plan by  a design

which appears to have been the favorite in *professional* eyes, to judge from the universally warm praise which architects have accorded to it. The exterior is a quiet severe Gothic composition in the style of Mr. Godwin's Northampton Town Hall, but with greater refinement and grace in treatment. Both the feeling displayed in the design and the masterly tinting in the unfinished perspective leave the authorship no very difficult enigma. It is only natural perhaps that the views of the committee and those of professional persons should not agree about this design, as it is of that peculiar character which is *too good* for the present popular taste in architecture.

In the selection of the three first designs it appears to have been a *sine qua non* that 'no Goth need apply.' If it is the case that any such feeling as this existed it would have been more just for the committee to have given expression to their views before the competition than to have passed over such a design as

that of  for instance to premiate such a one as "*Decor cum firmitudine*." The case is too glaring to be blinked.

Under the signature of "*Lux*" in a triangle Mr. Deane has succeeded in carrying off the second prize for a design in a Classic style; an unwonted field for him. The elevation exhibited is a bold one, and displays, as might be expected, some of that contempt for Classic niceties of detail which might be expected from so pronounced a Goth. The whole has a certain character of picturesque massiveness carried to extreme limits, which reminds one of Sir John Vanbrugh, and the amateur flights of fancy of Blenheim House.

The subject of the third prize design, we confess, we approach with very great reluctance, for more particularly in a local competition it is disagreeable to be censorious. The expressions of opinion, however, which have been made to us have been so numerous, so emphatic, and so unanimous that it would be puerile to attempt to gloss over the subject with any vague generality of criticism. The selection of this design for a place of honor is nothing more or less than an insult to the whole body of the competitors, save one—for there *is* one worse,—and, to put it in the mildest form, does not reflect credit on the committee. The plan is straggling and ill-considered, and does not even agree in details with the elevation. The exterior is set forth in a very mild drawing, and forms the central object of a whole row of red-brick houses. The design in an architectural point of view

is utterly contemptible; it consists of a *Grecian-Doric* basement—engaged columns of Egyptian stumpiness,—and over this a *Roman* Corinthian order; the angle which is next the spectator shews the Corinthian cornice returned on the thickness of the sham screen wall, in the approved shop-front fashion. A good design sometimes appears in but indifferent drawing, and clever drawing and tinting sometimes give a charm to an inferior design, an outrageously wild design is sometimes amusing like a very bad conundrum, but this "*Decorum firmitudine*" has none of these points of interest about it. With so many works of real merit in the room, it seems even a waste of time to have discussed it even so fully as we have done.

In our next issue we hope to have an opportunity of referring to the other designs; for the present we are obliged to bring our remarks to a close.

A passing tribute should be paid to the satisfactory hanging and arrangement of the drawings and to the courtesy and good-humoured attention of the secretary of the committee to all who have visited the exhibition of drawings, and wearied him with no doubt all sorts of aggravating enquiries.

NEW WESLEYAN CHAPEL, WICKLOW.

We give with this number an illustration of a small Wesleyan Chapel about being erected at Wicklow, from the designs of Mr. W. Fogerty, architect. The dimensions are 51 feet by 22 feet in the clear. A portion of the space is cut off at the entrance end to form a class-room and porch, with an end gallery over. This space may be readily thrown into the chapel at any time, and a separate porch and class-room added. The materials to be county Dublin brick, with red brick bands at intervals; and dressings of Dalkey granite sparingly used. The accommodation is 150 at present, but may be increased to 180 in the manner stated above.

GRAVING DOCKS AT KINGSTOWN.

We extract the following from a letter addressed to a morning contemporary. As to the *feasibility* of forming a graving dock there at a comparatively small expenditure we quite agree with the writer, but like the esplanade lately proposed to be formed along the shore, the project he proposes is a matter which would lead to much discussion as to its *desirability* in the locality alluded to:—

"Amongst the projects which daily present themselves to public attention, there is none more likely to be valuable as an industrial undertaking, or more likely to be profitable as a commercial investment, than the one I venture to suggest for the formation of an extensive range of graving docks at Kingstown, which may in a few words be laid before you. The magnificent basin to be converted into these docks is semicircular in shape, formed partly by art and partly by nature, being bounded on the one side by the eastern pier of Kingstown Harbour and on the other by the outward point of Sandycove. From the pier to the point, measured crossways at the verge of deep water, the distance is more than half an English mile, and this would be the length of the rampart or quay to be erected in front of this basin, at the edge of the sea, and to be intersected at intervals with sluice gates as openings to each of the graving docks. This quay would be by far the most expensive and troublesome portion of the undertaking, but once completed it would embrace within it a noble basin about 500 paces in breadth, from the road in front on the land side to deep water, comprising an area of some thirty acres, upon which graving docks could be formed side by side without the breaking of any new ground or without the incurring of any expense for excavation. Some surface rocks within the basin itself would indeed have to be quarried, but the materials of which they are composed could be employed to build the quay or to face the graving docks. The docks once made, they would be instantly let to shipbuilders, who would be lured to seek them by their unusual proximity to deep water. Had the Great Eastern steamship been built in such a dock as could be formed here she could have been floated where she lay, and the hundred thousand pounds expended in the launching

of her could have been saved to her shareholders. Sailing vessels, as well as steamers, are yearly increasing in size, and Dublin can have no pretensions to build, or even repair them, till it has some large docks in its immediate vicinity in which to place them. The docks at Kingstown would supply the desideratum, and the advantages, therefore, which they would confer on Dublin, as well as on Kingstown itself, in the increase of employment are so incalculable that I will not attempt to enumerate them."

THE DUBLIN ATHENÆUM.

CONVERSAZIONE AT THE EXHIBITION BUILDING.

This event, the programme of which had been for many weeks before the public, came off on Monday evening, in the Exhibition Palace, Earlsfort-terrace. We understand the result has been in every respect satisfactory. There were upwards of 6,000 persons present. The re-unions hitherto given by the committee of this invaluable society have been highly appreciated; that of Monday excelled former ones in the variety of its lengthened programme. It presented in pleasing form something to gratify almost every taste, whether in the fine arts, music, science, &c. The sculpture hall and galleries contained oil paintings of the Scandinavian school, and the Victoria Cross collection, statuary, &c. In the department of science, there was included illustrations of telegraphy by the Electric and Telegraphic Companies; an exhibition of a steam engine and hydraulic ram in process of working; wonderful microscopical illustrations of the faculties of insects illustrated by the ox-hydrogen microscope. A brief and graphic description of these observations was given by George Porte, Esq. In addition to these items Mr. Seacombe Mason exhibited Mr. Fanout's ingenious apparatus demonstrating the laws of rotation and the earth's diurnal motion. It clearly accomplished the purpose of its inventor in showing the principle and action of the laws that regulate the movements of our globe. Mr. Thomas Mason exhibited a collection of microscopes, and new and improved optical instruments. For the votaries of magic and sleight of hand there was the famous Dr. Lynn, who astonished numbers in the central hall by the performance of some of his best experiments. Wm. Carleton, Esq. read an extract from one of his works. Robert Ball, Esq., professor of elocution, recited a fine composition descriptive of Edinburgh after the defeat of Flodden. In the department of music there was great variety and excellence. The singing of Mr. Topham and Mr. Fletcher Baker afforded a treat that was highly appreciated. The programme of vocal music included some of the finest pieces from the works of the great composers, and also several of our prettiest ballads. In the central hall the fine band of the 10th Hussars, the Prince of Wales' Own, performed a brilliant selection, including the march from "Faust." The conversazione commenced at eight o'clock, and continued until near eleven o'clock. It will be understood from even the brief reference we have made to the variety of entertainments provided by the committee, and which were distributed throughout the building, that there was no lack of matter for amusement or instruction. The company availed themselves of the opportunity afforded by the building for enjoying an agreeable promenade.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

UNDER the *dry* title of "The Solution of the Formula (W.C.—W.)," Mr. James H. Owen proposes to present a paper at the Institute of Architects this evening. It is, however, understood that the practical expression of the formula will be to ascertain the value of what are known as "dry closets." The subject, however unsavoury, is an eminently practical and useful one, and there need be little apprehension that in such hands as the honorary secretary's the matter will assume the driest form of which it is capable under proper ventilation.

DISINFECTANTS.

The various disinfectants and deodorisers which may be employed in rendering less powerful the odours evolved from decomposing organic matter in cesspools, drains, &c., have lately received special attention. The most important of these agents is chloride of lime or bleaching powder, which, in the proportion of 1 lb. to the 1,000 gallons of sewage, proves itself a valuable and true disinfectant. The permanganate of potash,

or Condry's fluid, is likewise serviceable in treating sewage, but is principally of value in the disinfecting of clothes, which lose all disagreeable odours whenever treated with the fluid, and at the same time the fibre of the cloth is not injured. McDougall's disinfecting powder, which mainly owes its efficacy to carbolic acid and sulphurous acid, removes instantly the offensive odour of sewage, and portions of this powder strewn over the floor of stables, byres, &c., quickly renders the atmosphere of such places untainted by ammonia or other gases. A room in which a patient is located who is suffering from disease giving rise to offensive effluvia may have its atmosphere much improved by introducing a vessel containing some of this powder. Solutions of chloride of zinc, chloride of manganese, and perchloride of iron, with more or less water, are serviceable in fixing all odorous effluvia during the emptying of cesspools, &c. Charcoal, when strewn over decaying or putrifying matter, hastens the decay of such, and at the same time absorbs the gases. When the charcoal is associated with earth, its employment may be practically carried out. Quicklime, when treated with water, and used for white-washing over the walls and ceilings of rooms which have been inhabited by parties labouring under infectious diseases, or where much over-crowding has occurred, does good service in the destruction of any organic matters which may be lodging there. The mere application of heat, ranging from 210° to 250° F. to woollen bedding or clothes and other articles destroys any infectious matter which may contaminate such.

SEWING MACHINES.

AMONGST the various machines now being exhibited are those manufactured by Messrs. Wheeler and Wilson, Messrs. Grover and Baker, Messrs. Oxtan and Co., the British Sewing Machine Company, Messrs. Singer, and others. All these several specimens show what a great change has taken place in ordinary needlework, which, until a comparatively recent period, formed the occupation of so large a body of our female population. The facilities with which sewing can be effected by these modern inventions is something wonderful, and must ultimately confer inestimable advantages upon this particular portion of female domestic duty. Like every other invention, it has already been apparent that these machines are capable of important improvements, as regards the particular description of work which they can be made to produce. This fact is very conclusively illustrated by Messrs. Singer's machine. So far as we can understand, the properties of these machines generally have hitherto been confined to what in homely language may be termed plain sewing, but in addition to this, an entirely new feature has been introduced into the working of Singer's machines, which materially adds to their usefulness. Their distinctive peculiarity is that, beyond the ordinary lock-stitching, which in common with other machines they are capable of effecting, they are also so constructed as to admit of producing every description of ornamental embroidery and braiding, not only in one colour, but by varied colours in combination. A special feature which these machines possess is that any fabric, from the finest muslin to the strongest woollen, can be equally operated upon with the same celerity and ease.

BESSBROOK.

BESSBROOK is a manufacturing village in the County Armagh, about two miles from the town of Newry. Nearly three thousand hands find employment in spinning, weaving, field labour, and in adjunct departments of trade. The factory—a very handsome structure—is built of punched granite. The village is composed of two streets and an extensive square. The area in front of the houses in the square is neatly empaled with wood, and is intended for a shrubbery and pleasure-ground. Mountcaulfield and a long street of houses in Derramore group under the generic name; strangers know it as a whole by the name of Bessbrook. The factory and village were built by John Grubb Richardson, Esq., now sole proprietor of the place. It may be fairly called a Quaker colony. Mr. Richardson has built for their accommodation a very commodious meeting-house, capable of holding six hundred. The entire place, for tidiness and good order, is not surpassed in the kingdom, as visitors frequently observe. The wave of prosperity which goes out from this place has swept comfort into the dwellings, once so squalid, along the mountain brow and in the various nooks, where poverty had her haunts. Those who saw this neighbourhood twenty years ago would hardly know it now. The influx of population to the place created a necessity for churches. The Presbyterian church, erected in 1856, is too small to contain the audiences that now attend, and a subscription list has been opened for the purpose of enlarging it by building transepts or an aisle. There is also in course of erection a church for the Episcopalian congregation.

THE ARCHITECTURE OF ANCIENT EGYPT.*

It has often been remarked that the course of civilization among the various nations of the earth has been much the same as that of the sun, from east to west. Although the human family dispersed in every direction from the unfinished tower of Babel, scattering eastward, westward, northward, and southward, yet we find the main current of civilization set pretty generally toward the west. Eastward of this starting point of the human race we find teeming populations and vast antiquated monarchies; it is to the west however that we must look for skill in arts and arms, for intellectual culture and social progress, for civil freedom and religious liberty. To us, dwellers on the western shores of the old world, enjoying all the benefits of modern civilization, it is most interesting and profitable to turn our eyes toward those eastern lands which formed the cradle of our race, those seats of ancient empires, the sources whence were derived so much of our literature, philosophy, and art. In whatever department of human knowledge may be our favorite pursuit, we shall find much to interest in regarding the advances of ancient nations, who in so many instances opened up the way which modern and more favoured peoples had but to pursue, and who often attained a degree of proficiency which we have been yet unable to reach. To none more than to the professors and students of architecture should the study of antiquity be of importance, as the character of ancient nations is nowhere more fully exhibited than in the monuments which attest their skill in that art, and which, from their magnitude, durability, and high æsthetic character, not only illustrate most fully the history and social condition of the peoples who reared them, but convey to us lessons of the highest value in the principles of art and construction, in the practice of which we may claim to be the humble followers of those great and often unknown masters, who though dead yet speak to us in their works.

Among the countries thus dignified by antiquity and by historic associations Egypt occupies a prominent place. Its peculiar geographical position, forming nearly the point of junction of three great divisions of the globe, and forming the highway along which a vast portion of the commerce of the world must pass, marks it as a country whose importance centuries of advancing civilization cannot lessen and may increase. Constantinople and the Bosphorus, Gibraltar and its Straits, Darien and its Isthmus, are all important points in the geography of our globe, but their importance is far exceeded by that of Egypt and the Isthmus of Suez. The physical characteristics of Egypt, depending on its geographical position, are such as to place it alone among all the countries of the earth. It seldom rains in Egypt, nor, indeed, in that vast zone extending from the Atlantic eastward to the Persian Gulf; and but for the influence of the Nile, which, by its annual overflow, irrigates the adjacent country, and produces, under a powerful sun, a wonderful degree of fertility, Egypt would be like the vast Sahara on one side and the Arabian Desert on the other, a dismal expanse of arid sand, without the means of sustaining life, and traversed only by caravans at distant intervals; as it is, the fertility of the country fully justifies its Scriptural appellation, "The Garden of the Lord," and rendered it in subsequent times the great source whence the corn supplies of Imperial Rome were drawn.

It is scarcely to be wondered at that this singularly favored country should have been from the earliest to the latest times the theatre of events of the greatest historic interest. Numerous dynasties of Pharaohs successively occupied its throne, ruling over a highly civilized people, while Greece was the habitation of barbarians, and long ere the name of Rome was heard. Nor has its glory departed with that august line. The greatest conquerors of ancient and modern times perceived its importance, and aimed at its acquisition. The Persian hosts of Cambyes and of Darius, the Macedonian phalanxes of Alexander, the legions of Cæsar, and the armies of Napoleon, successively displayed their evolutions on its plains. The standards of the crescent and the banners of the cross have been unfurled to its breezes; and its brilliant sunlight has gleamed from the paucity of the mail-clad crusader, and flashed from the scimitar of his Paynim foe. One shore of Egypt witnessed the overthrow of Pharaoh and his host in the Red Sea, and another beheld the destruction of the navy of France, amid the thunders of Aboukir Bay.

The conquest of India by England; the discovery and colonization of Australia; the application of steam to navigation and railways; and the invention of the telegraph—all events of vast importance which might well issue in the diversion of commerce from many of its old channels, have all tended to increase the importance of Egypt, and to encourage the hope that, after centuries of Mohammedan oppression and misrule, this wonderful and interesting country may rise from the depths of degradation to which it has fallen, and share in the benefits of civilization and the blessings of Christianity.

The history of Egypt may be divided into five great epochs. Of these the first extends from the earliest historic records to the conquest of Egypt by the Persians under Cambyes, B. C., 525. This period includes the dynasties of the Pharaohs, during which Egypt attained the zenith of its power, and in which the greatest of its monuments were erected. The second epoch extends from the Persian conquest to the occupation of Egypt by the Macedonians, B. C., 532, comprehending a period of 193 years, during which Egypt was a very unruly province of the Persian empire. The third epoch comprehends the dynasty of the Macedonian kings, from the commencement of the reign of Ptolemy Lagus till Egypt became a province of the Roman empire, B. C., 30. During this period Alexandria became the capital, and the Greek language and literature were largely introduced. The fourth epoch comprises the history of Egypt as a Roman province, and as an appendage of the Eastern Empire till the Mohammedan conquest, A. D., 538. This event is remarkable as occasioning the destruction of the celebrated Alexandrian library, by which a vast amount of knowledge relative to the ancient history of the country was lost to the world. The fifth epoch comprehends the history of Egypt under Mohammedan rule, while nominally a province of Turkey, extending from A. D., 638 to the present day, and is by far the darkest of its whole history.

The first of these periods is that to which our attention is to be directed this evening. The materials for its history are very slight, consisting, besides what is mentioned in Scripture, only of portions of the works of Herodotus and Diodorus, both of whom visited Egypt and conversed with the priests, one in the fifth century before Christ during the Persian occupation, and the other about the year 60, B. C., during the reign of Ptolemy Dionysius, in what may be called the Greek period. Except the books of Moses, therefore, we have no record of Egypt written during the first and greatest period of its history. But in the absence of ordinary records, the monuments of ancient Egypt furnish a history such as scarcely any other nation has left to posterity; and not only a history, but a complete picture of life and manners, giving undoubted evidence of the high civilization then attained. On the sculptured walls of the great temples are represented the various political events which formed eras in early Egyptian history; and on the painted walls of the rock-cut sepulchres we see delineated with marvellous fidelity the domestic life of the nation. The hieroglyphic writing which surrounds and explains these sculptures and pictures has been partly deciphered; and the names of the kings in whose reigns these great monuments were erected have been revealed, as well as many other interesting portions of the history of the country. In this latter branch of enquiry, however, much still remains to be done.

The monuments of Egypt were not much known or studied in Europe till the commencement of the present century. The fame of Thebes and Memphis, the ancient capitals, had certainly spread through Greece and Rome, and the Roman emperors had carried away some of the monuments as trophies wherewith to adorn the Imperial city; but not till the French expedition, at the end of the last century, were the monuments carefully or critically studied. During the time of the Persian occupation the temples and other public buildings must have suffered much, the destruction of Thebes especially being ascribed to Cambyes, of whose ravages various traditions have been handed down. The monarchs of the Ptolemaic dynasty seem to have exerted themselves to restore some of the ancient glories of the kingdom, there being evidence of the rebuilding or restoration by them of some of the temples. The same remark applies to the Roman emperors, whose names are found engraven on many of the monuments which apparently were restored by or rededicated to them. Since then nothing but the imperishable and indestructible nature of the monuments themselves has saved them from total ruin.

When the French expedition was being organized, Napoleon, with that thorough appreciation of art which distinguished him, took with him a number of French *savans*, whom he charged with the duty of investigating the antiquities of the country, and of forming a collection of objects to be placed in the museums of Paris; also of preparing for publication drawings and descriptions of the whole. The publication thus begun was completed by the French Government, and forms one of the most magnificent illustrated works ever issued. The greater part of the collection fell into the hands of our government, and now forms one of the most interesting series of objects in the British Museum.

In order to point out the localities of the principal remains existing in Egypt, it is necessary for a moment to glance at the map, which is one of the simplest that can be imagined. Egypt consists of but one long narrow valley, through which the Nile runs, leaving on each bank a strip of fertile land, in some places several miles wide, and in others of very confined dimensions. The southern limit has been fixed by a natural obstacle, the cataracts, or rather rapids of Assouan, the ancient Syene, which are occasioned by a number of granite

* Paper read at the Ordinary General Meeting of the Royal Institute of the Architects of Ireland, on the 15th ult., by William Fogerty, Fellow.

rocks that lie across the stream (this granite, known as "Syenite," appears to have been extensively used in the temples and other monuments). This point is about 550 miles in a direct line from the northern boundary at the shores of the Mediterranean. From it the Nile runs generally northwards, with one great bend to the west, and forms at its mouth the well known "Delta." The valley of the Nile is formed by hills, a few of which, rising from 1,000 to 1,200 feet above the river, deserve the name of mountains. Those between the Nile and the Red Sea are intersected by numerous defiles, some of which have served in all ages as lines of communication between the river and the trading towns on the coast.

It is worthy of note that while the point above referred to has generally been adopted as the southern boundary of Egypt, the number of monuments existing in Nubia, within 150 miles to the south of that point, prove that the ancient boundaries must have extended to the southward at least as far as that distance. In most descriptions the divisions of Upper and Lower Egypt are adopted; and there is good ground for supposing that the earliest dynasty of kings reigned at Memphis, in Lower Egypt, and that subsequently another dynasty fixed the seat of Government at Thebes, in Upper Egypt. I shall not attempt in this paper to go into the question of Egyptian chronology, on which great difference of opinion exists; but shall now proceed to describe some of the principal monuments, especially as they illustrate the state of architecture and kindred arts.

The chief remains of the earlier or lower Egyptian kingdom, whose capital was Memphis, are the stupendous Pyramids, which seem to have formed the necropolis of that ancient city, as the rock-cut tombs did of Thebes, the later capital, in Upper Egypt. Besides these, the ruins of Memphis do not present any features of architectural interest. On the last occasion of our meeting we enjoyed the privilege of hearing a full account of the pyramids by one of our fellows, who has had the advantage of a personal exploration, and to whose lucid description we all listened with much interest. I have, therefore, to confine myself to the remains of the later Egyptian kingdom, existing chiefly in Upper Egypt and in Nubia, which latter, in all probability, once formed part of the same kingdom.

We may first consider the Public Buildings or Temples. Of these the finest remains exist in and about the site of Thebes, about 450 miles from the mouth of the Nile. This city must have been the centre of a powerful kingdom, probably the most important state in the ancient world; and its ruins belong to a period at which the Egyptians had evidently attained their highest skill in the arts, and in fact to a degree of perfection in architecture and kindred arts that has never since been surpassed.

Mons. Denon, one of the *savans* who accompanied the expedition of Napoleon, and much distinguished by his researches into Egyptian archæology, thus describes the first view of Thebes by the French army: "On turning the point of a chain of mountains, which forms a kind of promontory, we saw all at once ancient Thebes in its full extent; that Thebes whose magnitude has been pictured to us by a single word in Homer 'hundred-gated,' a poetical and unmeaning expression which has been so confidently repeated ever since. This city, renowned for numerous kings who through their wisdom have been elevated to the rank of gods, for laws which have been revered without being known, for sciences which have been confided to proud and mysterious inscriptions, wise and earliest monuments of the arts which time has respected,—this sanctuary, abandoned, isolated through barbarism, and surrendered to the desert from which it was won, this city shrouded in a veil of mystery by which even colossi are magnified, this remote city which imagination has only caught a glimpse of through the darkness of time, was still so gigantic an apparition, that at the sight of its scattered ruins, the army halted of its own accord, and the soldiers, with one spontaneous movement, clapped their hands."

Thebes lay on each side of the river, and extended in both directions as far as the mountains. On the eastern side a considerable plain intervened, and this was occupied by many great palaces and temples. Two miserable Arab villages, Luxor and Karuac, now stand on the site amid the stupendous ruins of the ancient city. On the western side, between the mountains, is the valley of Biban-el-Malook, in which numerous excavated tombs exist. Within a short distance of Thebes are found other great ruined temples, some in excellent preservation, as at Denderah and Edfou, which are, however, ascribed to the Ptolemaic period. The edifices of Luxor and Karnac were on the grandest scale, and may be ranked among the greatest architectural works ever executed. From these ruins we may form a pretty fair idea of the general arrangement and architectural character of an Egyptian temple or palace, for it is not clear to which use they were devoted. The entrances seem to have been treated as the most important parts, being usually between two gigantic structures, called "propylæ" or moles, each generally about 100 feet in length and in height, the depth being usually not more than 38 or 40 feet; their sides slope, and the top is crowned with a bold projecting

moulding; the doorway is commonly of large dimensions, that at Karnac being 25 feet high by 14 wide. The approach to the doorway was formed by an avenue, along the sides of which were ranged sphinxes or other sculptures, and obelisks appear to have been frequently placed in front and at the sides of the doorway, as at Luxor. The walls of these gigantic moles, and indeed nearly every portion of the wall space throughout are covered with sculptured representations in a peculiar kind of relief called *intaglio*, representing military scenes, processions, hunting groups, in fact presenting an extensive series of historical pictures, surrounded and interspersed with hieroglyphic inscriptions in great profusion. The use of colour for the further embellishment of these bas-reliefs seems to have been general. Inside the propylæ numerous chambers, passages, and stairs are found, supposed to be for the use of the priests in making astronomical observations. Having passed the entrance we come into a court surrounded by a colonnade single or double, covered by large flat stones. In some of the temples the columns are square, with figures in front, the hands of which are crossed, having two peculiar instruments resembling a crook and a scourge, one in each hand. Beyond this we generally find one or more covered halls, the roofs of which were formed of large flat stones, supported by columns. Of these halls, that at Karnac is the grandest, being 340 feet by 170 feet, the roof supported by 140 columns, of which the central row is 65 feet in height, and each column 11 feet in diameter; the other columns are each 45 feet in height, and 3 feet in diameter. No language can convey any idea of the grandeur of this hall of columns in its original state; and, ruined as it is, no artist has yet been able to do justice to it. By way of comparison with modern structures, it may be observed that this one hall covers a greater area than does the largest of Gothic cathedrals, that of Cologne. When it is remembered that this hall is only part of a great whole, it may fairly be asserted that the entire temple is about the largest assemblage of buildings ever erected. Other courts and halls succeed to this, varying in number in different structures, and sometimes giving evidence of having been the work of successive kings. We arrive at length, however, at the inner sanctuary, corresponding to the "*sekos*" in the Greek, and "*cella*" in the Roman temples. This was generally of small size compared with the approaches to it, and the intention seems to have been to produce in the highest degree in the minds of the worshippers the emotions of reverence and awe previous to their more immediate entrance. This room was generally oblong, of such dimensions as to require no columns for the support of its roof. It probably contained the figure of the deity or sacred animal worshipped; on each side of the sanctuary were distributed a number of small chambers apparently for the use of the priests.

The materials of which these great structures are composed is generally the red granite of Syene, in enormous blocks, polished to a high degree, and jointed so that a penknife could hardly be inserted between two blocks. Viewed as specimens of masonry they far exceed anything that has been executed in modern times. Among the hieroglyphics and other inscriptions, one remarkable form, a winged globe, seems to have been always used over the doorways.

Next to the architectural structures above ground, we have to notice the rock-cut temples, a peculiar class of works which exist chiefly in Lower Nubia, which as before observed was doubtless part of ancient Egypt. The most remarkable of these is the great temple of Ipsambul or Abonsimbel, which was opened by Belzoni, one of the most indefatigable of the various explorers who have devoted themselves to the investigation of Egyptian antiquities. The front of this temple is cut out of the side of a mountain of sandstone, and consists of four colossal figures, two on each side of a doorway leading to the various excavated chambers. The front was so much encumbered by the accumulated sand of centuries that at first sight Belzoni could discern nothing but the head and shoulders of one of the colossi. With the aid of such workmen as could be procured on the spot, the doorway was at length reached after the removal of the mass of sand that closed the entrance. He entered through this into a large excavated chamber, 57 feet by 52 feet, supported by two rows of square pillars, four on each side, each pillar having a figure in front, finely executed, and very little injured by time. Their heads reach the ceiling, which is about 30 feet high, the pillars being about 5 feet 6 inches square. Both pillars and walls are covered with beautiful hieroglyphics, and figures in relief. From this chamber a passage leads into a smaller one with four pillars, and from this latter others branch off in different directions, there being fourteen in all. The outside of this temple is magnificent. It is 117 feet wide, and 86 feet high; the height of the door is 20 feet. The four colossal figures are the largest in Egypt, with the single exception of the sphinx at the pyramids. From shoulder to elbow they measure 15 feet 6 inches; the ears are 3 feet 6 inches, the face 7 feet, and the head 5 feet 6 inches long; the width across the shoulders is 25 feet. Their height is about 50 feet, without the caps, which are about 14 feet high. On the top of the door is a colossal figure 20 feet high, and two

colossal hieroglyphic figures, one at each side, looking towards it. On the top of the temple is a cornice with hieroglyphics, and above this a row of sitting monkeys 8 feet high, and 6 feet across the shoulders.

A smaller rock temple exists in the same neighbourhood, somewhat similar in its general features. These may be pronounced some of the most singular works in existence. The amount of labour and skill necessary for their execution can hardly be conceived. A remarkable temple exists at Girgeh. It is partly built and partly excavated, standing midway in architectural character between the last described temple and those of Luxor and Karnac.

We may now proceed to consider the tombs, which exist in the greatest numbers, as already stated, in the valley of Biban el Malook, on the western side of the ancient city of Thebes. The religious system of the Egyptians led them to devote much attention to the preservation of the bodies of their dead. They believed that departed spirits were doomed during a period of 3,000 years to occupy the bodies of the lower animals, but that these transigrations could not commence until the original body was entirely decayed; so that by preserving the body during the period of transmigration, that humiliation would be avoided, and the soul be enabled to purify itself and prepare for passing the final judgment, and so obtain admittance to the presence of Osiris, and to the tranquillity of the blessed. Hence, all classes laboured to the utmost of their means to provide for the preservation of their mortal remains; and of course in proportion to the wealth of each was the care and skill expended in embalming his body, and providing for it a secure receptacle. Herodotus describes three different modes of embalming practised at the time of his visit to Egypt, varying in price, and consequently intended for persons in different pecuniary circumstances. Besides differences in the chemical appliances, the bodies of the poorer class were only wrapped in numerous cloths, and so placed in the tomb; those of the middle class had in addition a wooden case or coffin; while the bodies of the wealthy and great, especially of the kings, were placed in sarcophagi of costly workmanship, which were deposited in tombs of vast extent, involving immense labour and consummate skill in their excavation and interior decoration, such as those at Biban el Malook. On the walls of these tombs were depicted in highly-coloured bas-relief, scenes in the life of the deceased—representations of nearly every occurrence in ordinary life; and in them were deposited statues, small images of deities, and specimens of innumerable articles of daily use, the whole illustrating most minutely the arts, manufactures, and social habits of the people. In fact, the contents of the tombs furnish at present the best information on these subjects, though it does not appear that the Egyptians intended them to convey any such information to posterity. The most popular theory is that the tombs were so adorned and enriched to afford a solace and amusement to the souls of the departed in their long confinement, to aid in dispelling the vacancy of mind from which they might naturally be supposed to suffer during so long a period as 3,000 years.

The tombs are generally approached by an unobtrusive doorway, sometimes almost concealed, which usually leads into a range of galleries, descending by slopes or steps. The galleries vary much in their length and number, being sometimes of great extent, and often the contrary. This is accounted for by the fact that each king on his accession commenced excavating his tomb, and as but few men could be employed on the work, its magnitude depended on the length of time allowed for operations, in other words, on the length of the sovereign's reign. Hence the extent of the tomb forms an index to the duration of the reign of the monarch for whom it was intended. One of the most extensive is that of Manepthah, opened by Belzoni. The roofs of the galleries were either sloped or curved; no arch, however, existing, the roof depending for support only on the natural stability of the rock, except where the span was of considerable width, when supports were left, frequently carved into figures. The doors of the various divisions were formed by a sliding portcullis of granite, and the sides of the galleries were either covered with hieroglyphics or sprinkled to resemble granite. Wooden doors also were used. The object in the construction of these tombs seems to have been the opposition of the greatest number of obstacles to any one seeking access, and to secure from pillage the treasures and mummies therein deposited. Hence the doors are often succeeded by deep pits, the entrance to the passage being sometimes at the bottom and sometimes at the top to baffle search. The galleries lead at length into a hall, the roof of which is supported by pillars sculptured and painted; and here again a contrivance is used to baffle the explorer, who finds the continuation by taking up some of the floor slabs and descending a stairs, passing through several similar halls or galleries, and at length arriving at a lofty chamber called the "Golden Hall," in which the sarcophagus containing the embalmed body of the king was deposited, the mummies of his vassals and attendants being ranged in cells round the walls. A specimen of the sarcophagi, of alabaster,

brought over by Belzoni, is to be seen in Sir J. Soane's museum, also several in the British Museum; they vary much in size, one having been found 15 ft. 6 in. long and 8 ft. high. The chief subjects of the bas-reliefs were the sun, and representations of the judges sitting in council to adjudicate the fate of departed spirits. Elaborate and highly-coloured paintings are also to be found on many of the walls. These Egyptian sepulchres contrast with those of the present day by having all their ornamentation inside concealed from public view. In the figures on the bas-reliefs, &c., the Egyptians are distinguished by a reddish-brown colour on the face and arms, Ethiopians are shewn black, Assyrians and Israelites by other colours. The tombs were not always intended for kings; some were doubtless constructed for priests and persons of distinction. Various animals held sacred had tombs provided for them, which may have been used as temples. Some have been discovered containing the mummies of cats and other sacred animals.

Having thus described generally the temples, tombs, &c., we shall now proceed to notice some of their more interesting details and accessories. In regard to the columns, of which mention has before been made, we find them distinguished by a much greater variety of design and proportion than is found in those of the Greeks and Romans who used but three varieties or "orders." In an attempt to divide Egyptian architecture into corresponding orders, Sir Gardner Wilkinson in his "Architecture of Ancient Egypt," enumerates no less than eight. Though we do not altogether agree with such a division, we may still regard it as pretty well expressing the classes into which the various specimens may be arranged for convenience of description. This classification is as follows, viz.:—First, the square column, plain and simply painted, or ornamented with devices in relief or intaglio; second, the polygonal column, plain or fluted; third, the bud capital column, with a simple round shaft, or fluted in imitation of the stalks of water plants bound together; fourth, the full-blown papyrus column, with a capital in the form of an inverted bell, representing the head of a flower of the papyrus, with a simple round shaft; fifth, the palm-tree column; sixth, the Isis-headed column; seventh, the composite column; eighth, the Osiride pillar. This classification can only be regarded as expressing the general differences; each order might again be divided into many subordinate varieties. Of the bud-shaped columns, some of the finest are at Karnac. In the great hall there are two varieties: one of the bud-shaped form which supports the roofs of the two side aisles, as they may be called, and the other, of greater height, of the bell or papyrus form, a row of which stands at each side of the central passage. In the bud-shaped columns the shafts are three diameters high, and the capitals one diameter; the bottom of the shaft is rounded inwards on a plinth or pedestal, and diminishes to five-sixths of its diameter under the capital, which expands at its lower end to the greatest diameter of the shaft, and diminishes again at the top to three-quarters of that diameter. On the top is a square abacus, which is of different height in many capitals.

Obelisks are the simplest forms of Egyptian architecture. The position in which they usually seem to have been placed was in pairs in front of the propylæ of the temples, one at each side of the doorway, as at Luxor and Karnac. Pliny tells us that obelisks were dedicated to the sun, in proof of which he adduces the similarity of their form to a ray of light. The hawk-headed deity which appears on many of them is supposed to typify the sun. The word obelisk owes its origin to the Greek "obelos," which signifies a spit or skewer, and seems to have been applied by the Greeks in ridicule. The material of the obelisks is usually granite or basalt, the larger ones being of syenite, and their form a quadrangular prism, or more correctly, as the sides are sloped, a frustum of a quadrangular pyramid. Their height is usually about nine diameters, and the top is finished by a small pyramid of nearly the same height as its base, called the "pyramidion." The obelisks were commonly placed on a pedestal of two or three steps. They were nearly square on plan, but with a degree of convexity on the sides, which proves that the Egyptians understood the minute as well as the broad principles of design, this form being adopted to avoid the harsh effect of a straight line. The same may be observed of the elevation, the sides not being straight lines, but possessing a degree of curvature corresponding to the "entasis" of the Greeks and Romans. The sides were sometimes plain, but more commonly covered with hieroglyphics, of which three columns sometimes appear, seemingly the work of different kings, and containing their titles and exploits. The central column in such cases is invariably the earliest and most deeply cut. Though often of very large dimensions, the Egyptian obelisks were always in one piece, and are hence called "monoliths." The difficulty of quarrying them must have been great, but is exceeded by that of transporting and erecting them. Of the pair at the entrance to Luxor, one of which was brought to Paris and set up in the Place de la Concorde, the remaining one is 86 feet high, and about 9 feet diameter at the base. The largest in Egypt is at Karnac; it is calcu-

lated to weigh about 290 tons, and must have been brought from Syene, a distance of 138 miles. Others at Heliopolis, varying in height from 70 to 93 feet, must have passed over a distance of 800 miles. These dimensions and weights are less than those of some of the colossal statues which appear to have been transported great distances, as for instance the statue of Rameses II. at the Memnonium, which, when entire, weighed upwards of 887 tons, and was brought from Syene to Thebes, a distance of 138 miles. These instances afford ample proof of the mechanical appliances and engineering skill of the Egyptians. The difficulty and expense attending the removal of these vast blocks rendered them very precious. Pliny mentions that Rameses the Great had his son fastened to the apex of one while it was being erected, so anxious was he for its safety. One of the obelisks in front of the propylæ of Luxor exceeded the other in height by about 8 ft.; but rather than reduce it, the architect elevated the smaller one on a pedestal 4 feet high, and advanced it a little in front of the other. The Roman emperors were sensible of their value—expending large sums in bringing several to Rome, and setting them up in various places in the city. Most of them were afterwards thrown down, and some were broken, until the time of Pope Sixtus V., who employed Domenic Fontana to re-erect some of them. His successors employed Bernini and others to erect the rest. There are now twelve at Rome, placed on pedestals of modern Italian design, totally at variance with their character. Bernini placed one on the back of an elephant. Some were also taken to Byzantium. One of the Luxor obelisks was taken to Paris in the reign of Louis Philippe, and set up in the Place de la Concorde. The cost of its transport and erection amounted to about £30,000. The means adopted have been described in a ponderous folio volume by the engineer, M. Lebas. The other was presented to our government, but the expense of bringing it over, calculated at £15,000 at least, has hitherto prevented its removal being undertaken.

Egyptian sculpture may be divided into three classes, viz:—First, Intaglio, already noted, in which the representations are produced on a flat surface by cutting the contour of the figure pretty deeply all round, and forming the enclosed space into a convex section. Second, Relief, high or low, in which the surface intended for representation is lowered, and the figures left standing out, to a greater or less extent. Third, Statuary, in which the whole block is cut into the actual form of the object to be represented. This division is not in the order of time, probably the bas-relief was the first used, but all three were practised at the same period. The same artistic character prevails in each, with certain modifications; this was regulated by prescribed rules and conventionalities which remained unchanged through many ages, and which fettered and cramped the genius of the Egyptian sculptors. This is especially to be noted in every subject pertaining to religion: the figures of the gods, and consequently of the kings, who claimed divine ancestry, being laid down rigorously and adhered to, and the same attitudes continuing in use without any attempt to copy nature, or to give proper action to the various parts of the body. These latter remarks apply with greater force to representations on a flat surface than to the statuary; because in the former, action is intended to be represented, while in the latter the figures are usually in a state of repose. In the flat representations the pictures seem to be formed of isolated parts put together without preconception of effect; so that the expression of feeling and passion is deficient in the faces, and the limbs indicate only by their position the action of the figures. The human countenance always appears in profile, but the eye as if seen in front; the shoulders appear in front, though a side view is indicated by the position of the arms, and the feet are placed in an anomalous position. Perspective was either unknown or unattended to; hence representations of buildings are often difficult to be understood. A row of the same kind of figures is shewn with the lines exactly parallel. The principal figure in a scene, as the king in a battle, is portrayed of a colossal size compared with the others, especially the enemy.

In the bas-reliefs of the tombs at Thebes representing the ordinary scenes of life and military subjects greater license seems to have been allowed. Many of the figures exhibit much spirit, shewing that the genius of the artist occasionally overstepped the strict bounds by which it was confined. In the representations of animals particularly we may notice considerable excellence in their resemblance to nature, and much greater spirit appears in the action; it would seem, therefore, that the rules and conventionalities did not apply so strictly to animal forms as to the human figure.

In the statuary, the position of repose was most generally adopted, usually sitting with the hands either on the knees or crossed on the breast, sometimes kneeling with a small shrine in the form of a temple supported in front, and sometimes standing with the arms down the sides, or, as in the figures in front of the columns supporting the roofs of temples, crossed on the breast and holding a crook and scourge in either hand. The expression of the countenance is always that of a calm tranquillity, a smile sometimes upon the lips, and the

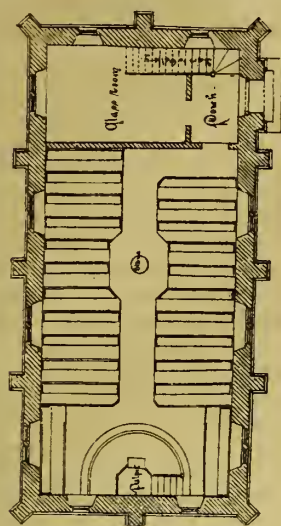
object sought is here truly attained in the majestic and composed dignity of the features, which does not at all appear in the bas-reliefs and intaglios, which, as before remarked, are entirely devoid of expression. The hair and beard are represented by parallel groovings; the former generally in a large mass, something like a judge's wig (indeed it is doubtful whether it were not meant for a cap), the latter also in a cylindrical mass projecting downwards from the chin, which may have been intended for a case. In some figures a cap called (from a fancied resemblance) a "corn measure" appears, and in one a very high cap with no hair beneath it. The ears in Egyptian statuary are much higher than in nature, and the lips rather thicker than the European type; in some they are much thicker than in others, shewing that the Nubian features were the model, being similar to the negro or original African race. The execution of both intaglios and statuary exhibits generally the most exquisite smoothness and finish: the artists, being restricted in conception and design by the rigid rules to which they were subject, appear to have bestowed all their care in producing that degree of excellence in the polished surfaces and sharply defined edges which appear on their monuments, and which are scarcely to be equalled by modern sculptors. The exquisite finish of the sculptures, and the delicacy shewn in cutting the hieroglyphics, are especially deserving of admiration when we remember that the material in which they were executed—syenite—is so hard as to turn the edge of the best-tempered steel tools with very little use. Bearing in mind that copper or bronze hardened with tin seems to have been the metal in use for tools and weapons, it is difficult to conceive how such instruments were capable of executing such sculpture, unless we suppose the Egyptians to have possessed sufficient knowledge of metallurgy to enable them to render copper harder than steel. As iron was known in the later periods of Egyptian history it is just possible that it may have been in use in the earlier period, but that its perishable nature accounts for the absence of specimens. Sir Gardner Wilkinson thinks it probable that emery powder was known and used in the cutting and polishing of granite and other hard stones.

In the British Museum are several colossal seated figures of the goddess Pasht, or Bubastis, represented with the head of a cat, and generally surmounted by an upright circular disc. The figures are human in every respect but the head, and probably represent the goddess whom they worshipped in the cat. One of the principal deities represented on the bas-reliefs is a hawk-headed figure. There is also in the British Museum a colossal statue in greenish-coloured granite of the beetle, or scarabæus, an insect of peculiar sanctity among the Egyptians. Great numbers of smaller figures of the same insect are found in the tombs, on the breasts of the mummies, cut out of various precious stones. The same figure is of frequent occurrence in the hieroglyphics. Whether the reverence paid to such creatures was due to the doctrine of transmigration it is difficult to say; but it may be remarked that nations of the present day holding such doctrines pay a similar reverence—as the Hindoos and Burmese. At Thebes there exist two colossal statues, about 60 feet high; one of which was long celebrated for emitting a sound, and hence called the vocal Memnon. This was while it was broken across at the waist, but it has since been repaired, and the sounds have ceased.

There are also several small figures in the British Museum, in a sitting posture, with the hands on the knees. From them we may form some idea of the effect of the colossi, the posture and style of both being the same. The upper part of these figures is generally naked; the lower limbs clothed with a garment sometimes reaching to the knees only, and sometimes extending to the feet, often so closely drawn about the legs as to give the effect of their being united.

These figures were probably placed in pairs before the entrances to the great temples. The character of the scenery of the country—level plains scarcely varied by a hill or tree—led the Egyptians to adopt the simple but colossal forms which their temples present; any other would have appeared insignificant in the midst of such extensive tracts of country, as the buildings could be seen at a great distance. As the propylæ were often more than 100 feet high, in order to be in keeping with them the obelisks and statues placed before them required to be of such enormous dimensions. Sphinxes also were used to form approaches, a double row of them, called a 'dromos,' being generally the first feature to be observed in approaching the temples.

I shall now devote a few remarks to the hieroglyphics. On entering that portion of the British Museum devoted to Egyptian antiquities, the object which first arrests attention is a large piece of black basalt, fixed on an iron stand in the centre of the room, and commonly known as the Rosetta stone. It derives its interest from containing a triple inscription on the flat surface at present upturned, by the aid of which the key to the hieroglyphics was recovered. The stone itself was found by the French army among the ruins of



Ground Plan.

WESLEYAN

CHAPEL

WICKLOW.



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Fort St. Julien, near the mouth of the Rosetta branch of the Nile; and on the capitulation of Alexandria it fell into the hands of the English, and was brought over in 1802 by General Turner. The interpretation of the writing of ancient Egypt is a subject which has long attracted attention. Many Greek and Roman authors wrote upon it, professing in some instances to give translations of hieroglyphic passages; but their own knowledge seems to have been of a very imperfect kind. On the revival of learning in Europe in the 15th century, curiosity was again awakened on the subject. The statements of the classic writers gave reason to believe that very profound and important knowledge would be re-opened to the world on the discovery of the mode of interpretation, but it was also supposed that the key had either been lost at the time of the Persian conquest, or was afterwards to be found only with a few of the priests; it having been related that one of the Roman emperors, being about to erect one of the obelisks at Rome, offered a large reward to any one who would decipher the inscriptions on it, but without success. However this may be, we know that the names of nearly all the Roman emperors have since been read inscribed in hieroglyphics on the Egyptian monuments. Until the time of the celebrated Kircher little or no progress was made towards the desired discovery. He pointed out the Coptic tongue as the language of ancient Egypt; but the interpretations he assigned to several pieces of hieroglyphic writing were of small value, and possessed the remarkable peculiarity of exhibiting equally consistent meaning, whether they were read from the beginning, the end, or the middle. The Rosetta stone on its discovery shed clearer light on the subject; it contains three inscriptions; one in hieroglyphics, one in a character called in the inscription itself "enchorial," or the character of the country, and a third in Greek, professing to be a translation of the other two. On the arrival of the stone, these inscriptions engaged the attention of the *savans* of the day. Professor Porson and Dr. Heyne succeeded in supplying some deficiencies in the Greek inscription, which is a decree of the priests extolling and conferring divine honors and worship upon Ptolemy Epiphanes, the fourth successor of Ptolemy Lagos, to whom Egypt was allotted at the death of Alexander of Macedon. The date is about 193 B.C. By a careful comparison of the inscriptions, Mr. Akerblad pointed out in the upper or hieroglyphic passage a set

of symbols distinguished by one, two, and three points, which correspond in position with a place in the Greek where "temples of the first, second, and third orders" are mentioned; and the Baron Sylvester de Sacy also proved two other sets in the second inscription to indicate the names of Ptolemy and Alexander. Dr. Thomas Young, however, in the supplement to the *Encyclopædia Britannica*, gave the result of a more profound and diligent comparison, and succeeded in pointing out the probable meanings of a number of different groups of enchorial characters, and also in recognizing the name of Ptolemy in the hieroglyphic inscription enclosed in an elliptic figure, or "cartouche." He further suggested the division of the word into its component letters as a means of assigning their alphabetical value. A small obelisk was found about this time by Belzoni in the Island of Philæ, containing a Greek inscription on its base, being a petition from the priests of Isis, in that island, to Cleopatra, wife and sister of Ptolemy, and hieroglyphic inscriptions to the same effect: and in pursuance of the idea of Dr. Young, of separating the words into their component letters, M. Champollion, a young Frenchman, who had hitherto been searching with great zeal and assiduity for materials for interpreting the hieroglyphics, but under a wrong impression, instituted a comparison between the names of Ptolemy on the Rosetta stone and Cleopatra on the obelisk, by which he assigned with certainty to the several symbols their alphabetic value. By his further labours, and those of his contemporaries, the system of hieroglyphic writing has become partially understood, and, according to him, contains representative and figurative as well as phonetic principles. The enchorial writing is supposed to be similar in principle, being a modified form of the other. But though so much has been done, and the inscriptions on many of the remains deciphered, there seems still to be a good deal of controversy on the subject, and doubtless ample room for the extension of the knowledge already acquired.

I have now but to conclude this imperfect sketch of some of the architectural wonders which exist in that interesting country, and which, after a lapse of thirty centuries, stand forth to attest the constructive and artistic genius of the people who erected them, proving to us that indeed there were giants in those days, and bidding us, amid all the triumphs of modern science and art, regard this ancient people with profoundest reverence and admiration.

ROYAL IRISH ACADEMY.

A GENERAL meeting of the Academy was held on Monday evening, at their house, 19, Dawson-street. The Very Rev. Dean GRAVES, President, in the chair.

The President proceeded to deliver an address on the loss sustained by archaeological science in the death of the late George Petrie, LL.D., Vice-President of the Academy. He said that but a short time had elapsed since they had been deprived of one of their greatest ornaments—Sir William Rowan Hamilton; and their grief for that loss had been still fresh in their minds when the hand of death again came among them cutting off another who was foremost in their ranks. The learned speaker having referred to Dr. Petrie's qualities as a painter, alluded to the good he had done to Ireland in regard to science. Some of his essays were of the highest order, particularly those on the "Round Towers of Ireland and Tara." He had shown good grounds for the conclusions come to in these essays, and they were to be read with the greatest interest. His intense intellectual energy was out of proportion to his health. He was very slow in his work, because he was very cautious, truthful, and unsparing in his labour. Dr. Petrie commanded qualities which are rarely to be found in the same individual. He had the imaginative power so essential to an artist, and the other qualities which are supposed to be characteristic of a man of science. In conclusion, Dr. Graves said that he need not try to complete the imperfect portrait he had formed of Petrie, the antiquarian, historian, painter, musician, and genial, refined, true-hearted gentleman. The recollections of those present might supply the train which he (Dr. Graves) had omitted or drawn with a faltering hand. There was no reason to fear that the memory of Dr. Petrie would go from them, but they would cherish every reminiscence of the man for whom they all felt so warm and sincere respect. But they should not allow their grievance for him to bring them into a state of despondency, instead of following his example. Let them, then, find consolation in the thought that his influence would survive in that Academy. His reputation had been a growing one, and it would be a lasting one, because he had done things that would endure. It had struck its roots deep in the affection and respect of Irish hearts, and it will continue to flourish there, unless they fell upon this evil in which men lose the right to hope for the living, because they have become careless and cold in paying honour to their illustrious dead.

Dr. Stokes, in rising to move that the thanks of the Academy should be offered to Dr. Graves for his admirable and lucid address, said he hoped the

meeting would believe him when he said his business in the first instance would be to apologize to the Academy if he fell very much below what he should in expressing what he ought to express in reference to the memory of the late George Petrie. It was with no affectation he declared that he spoke upon that occasion, as a child would speak of his father, of George Petrie; he had been his intimate companion and his comrade for nearly half a century. He had known his inmost mind and heart, he supposed, better than most men, and it was a matter to him of great delight and rejoicing to hear the character of his (Dr. Stokes) friend, and the friend of Ireland, for Dr. Petrie was the best Irishman that ever lived, and the truest—spoken of in such a way as had fallen from the lips of Dean Graves that night. It was not long ago since they heard from the lips of the chairman that admirable oration on the character of Sir William Rowan Hamilton, and he (Dr. Stokes) thought the chairman and his friends ought to have great reason to be proud at the fact that at the termination of his presidency he was then leaving them with the recollection of those two admirable orations which few men were able to deliver. Hamilton and Petrie were two admirable men and great Irishmen, and they had received proper treatment at the hands of Dr. Graves. He thought the thanks of the Academy should be voted to their president, and that the subject on which he had spoken that evening should not be entered on the minutes alone, but should be printed in a separate manner, and largely circulated. He might mention that Dr. Petrie was the first man to remove from Irish antiquity the just grounds of ridicule in which it was held, and therefore they had reason to be grateful to him whether they were antiquarians or not. He had removed one of those sneers which had often been placed on this country, and he always endeavoured to reconcile the existing Irishman with his existing state, and show that the fault was not all on one side. He presented very rare combinations; he was a patriot and a loyalist; he loved his country, and in his investigations about her history he endeavoured to tell the truth on both sides. Dr. Petrie might be regarded as the founder of the Irish school of antiquarians. He had made great contributions to the well-being, true history, and glory of this country, and he (Dr. Stokes) begged to return thanks on his own part to the chairman for speaking of Dr. Petrie as he had done.

The Rev. Dr. Reeves, in seconding the motion, said he had known Dr. Petrie for the last twenty years. He was a man to be loved as well as revered, and if there was a man to command admiration and esteem, Dr. George Petrie was the man to do it.

Lord Talbot de Malahide was elected by ballot as a member of the council in the department of antiquities.

The thanks of the Academy were voted to the Rev. Robert King, for his contribution on "The Primacy of Armagh" in the form that it originally appeared in the *Armagh Guardian*.

A MODEL (?) TOWN—ONLY A CLOCK WANTED!

AMONGST the correspondence in a recent number of a western journal we find the following:—"It must be admitted by the most fastidious that L— has made very considerable progress in the way of beauty and utility since the formation of a body of Towns' Commissioners. Any requirements or projected improvements which might have escaped their own diligent observations, on being pointed out to them from time to time, have been carefully attended to, as may be seen from the *cleanliness of our streets, the brilliancy of our lamps, the flagging of our lanes, &c.*, so frequently alluded to in your pages; but there is *one* thing yet required, the want of which has been long felt by the people of the town and those who frequent it—that is, a Town Clock. I am sure it need only be hinted to the Commissioners, and this useful and ornamental appendage will be supplied."

We wish the writer had alluded to the necessity of the Commissioners providing a supply of *pure water* to the town. Its population is somewhere about 3,000, and we understand from Dr. Mapother's statistics of Irish towns that the water supply to this one "appears to be abominable, being derived from the lake into which the sewers, particularly those from the military and police barracks, empty!" On the subject of the contamination of our lakes and rivers by such means, Mr. A. Ramsay, in a paper read to a Scottish Society, remarks:—"The circumstance which has chiefly aroused public attention to the question is the state of pollution to which most of our largest and finest rivers have been reduced by being converted into common sewers. In the eyes of many persons it is not much that the fish within these rivers are destroyed; but when their pure and wholesome waters are converted into poison, and beautiful streams, which are the very emblem and embodiment of purity and salubrity, are reduced to a seething mass of pestilence, disgusting and revolting to those senses which nature has bestowed upon us to warn us away from objects which are offensive to us and dangerous to our health, the subject claims the attention of every one."

THE CHEMISTRY OF NATURE.

(Continued from page 41.)

I MUST now return to the question of how vision is produced, which we have been considering. We have been questioning nature upon it, and I believe it will be admitted that her answers have been very clear and decided that the representations of visible objects on mirrors, and on the retina of the eye, are not formed of actual rays of light in the same way as they are formed on a surface of white cloth by means of the magic lantern. If I have made this point clear, it will be quite sufficient for my present purpose, because it will then be evident that it is not necessary that light should come to the earth from the sun, moon, and stars, in order that they may be seen by us. The next point to which I invite your attention is, the eclipses which occur with the sun and moon. As you are aware, an eclipse of the sun is caused by the body of the moon getting in a straight line of direction between the earth and the sun, and during the time it remains a circular space, never more than 180 miles in diameter, is very much darkened. A total eclipse of the moon is caused by the body of the earth getting in a straight line of direction between the sun and the moon, when, instead of the surface of the moon being very much darkened, it simply changes from a silver-coloured to a copper-coloured hue. According to the theory which supposes the sun to be the source of light and heat to the solar system, the greater diminution of light on the small spot of the earth's surface, and the lesser diminution of light over the whole of the moon's surface, on such occasions, are caused by the body of the moon intercepting the sun's light and preventing its reaching the eclipsed part of the earth's surface in the case of the total solar eclipse; and the body of the earth getting between the sun and the moon, and intercepting the whole of the sun's light, and thereby preventing any part of it from reaching the moon's surface during a total lunar eclipse. According to the theory I am advocating, I account for the greater diminution of light over the eclipsed part of the earth's surface during the time of a total solar eclipse, by explaining that, when the dark body of the moon is situated between the earth and the sun it intercepts that portion of ignipotent or chemical power which would otherwise act and reach between the sun and the eclipsed part of the earth, and that during the time such portion of ignipotent or chemical power continues to be intercepted or cut off, it ceases to excite the inflammable gases which exist over that particular eclipsed part of the earth's surface; that during a total eclipse of the moon, the dark body of the earth gets between the sun and moon and intercepts the whole of the ignipotent or chemical power from acting and reacting between the sun and the moon; and that during the time of its temporary absence, such ignipotent or chemical power ceases to excite the inflammable matter over the whole of the moon's surface. Except in search of facts, it is no use going to books for evidence to decide which of these conflicting theories is the true one: the only authority that we can depend on is nature herself, we will therefore question her, and then endeavour to truthfully pourtray her answers.

A solar eclipse only takes place when the dark body of the moon is situated between the sun and the earth, and it depends on the distance which the moon is from the earth whether such eclipses are total or annular. When the moon is nearest the earth they are total; when the moon is furthest from the earth the eclipses produced are annular. When total they never eclipse more than a circular space of 180 miles in diameter, which is a very small spot when compared with one entire half of the earth's surface, all of which, except the spot eclipsed, continues to be flooded with light in the usual way, even during the time of the eclipse which never remains total longer than four and a-half minutes of time. As it only depends upon the distance which the moon is from the earth whether a solar eclipse is total or annular, it necessarily follows that if I place any object over the surface of the earth between it and the sun, so as to cast a shadow, such a shadow is a miniature eclipse of the sun to that particular spot where the shadow exists, and, for experimental illustration, will fully serve our purpose upon the admitted principle, that the same laws which govern the ocean govern a drop of water which is but an infinitesimal portion thereof. If, then, I place an object, viz., my hat, before my eyes so as to completely hide the disc of the sun, the sun then becomes totally eclipsed to my eyes; when I do this, although I cannot see the sun, I nevertheless see light—called solar light—flowing down all round the dark body of the hat and falling upon the earth. In the same way, if I place a shilling before my eye so as to hide the flame of a gas lamp, I see light spreading out all round the shilling. If, then, light really and truly comes from the sun to the earth, it ought to be seen during the time of a total solar eclipse, flowing down toward

the earth all round the dark body of the moon, in the same way as we see it flowing round the hat and also round the shilling, as above described. But how stand the facts of the case—Dr. Halley, Stukely, and others who have witnessed total solar eclipses, tell us that no light whatever is seen, either spreading out from the surface of the sun, or flowing down round the dark body of the moon on such occasions. To use the language of Dr. Stukely, who witnessed a total solar eclipse from Haradon Hill, near Salisbury, in 1724, he says, "there was nothing in the heavens to mark the sun's position, and his disappearance could not have been more complete had he been annihilated out of existence."

As no light whatever is seen issuing or flowing down from the sun during the time of a total solar eclipse, although one half of the earth's surface continues to be flooded with light in the usual way, nothing can be more clear than that such light does not exist above the earth's atmosphere, and that none of it whatever comes from the sun. To render this inference, if possible, more conclusive, I will now refer to an account given by the celebrated astronomer, Schumacher, who witnessed a total solar eclipse at Vienna, on the 8th of July, 1842. He says, "blue pale vapours were observed to form in the eastern horizon during the eclipse, and one of the most striking and unexpected results was a red and lurid glow that suddenly kindled upon the horizon, the blue pale vapours which had risen from the east being converted into the semblance of a mighty conflagration." This occurred the instant the disc of the sun began to reappear. In another total eclipse of the sun which happened over London on the 22nd of April, 1715, the astronomer, Dr. Halley, who observed it, thus writes, "it was universally observed that when the last part of the sun remained on the eastern side it grew faint, and was easily supportable to the naked eye, even through the telescope, for above a minute of time before the total darkness; whereas, on the contrary, my eye could not endure the splendour of the emerging beams in the telescope from the first moment." Here, then, are two distinct records from two distinguished astronomers, proving that the light which reaches the earth is much less for some time before the sun entirely disappears than it is on the first instant of his reappearance. This can easily be accounted for according to the theory I am advocating, but how can it be accounted for by the theory which supposes the sun to be the source of light to the solar system? According to Dr. Halley the fact was so palpable that "it was universally observed;" and according to Schumacher the fact was startling and unexpected. These astronomers state the fact as a fact, but they do not attempt an explanation; and according to the theory of the sun being the source of light to the solar system, I can discover no ground to sustain an explanation, for if the sun were to supply light to the earth that part of his disc which remains visible for the minute of time preceding his total obscuration ought to supply the earth with as much light as that part which becomes visible during the first minute of his reappearance, but we have the unbiassed evidence of two celebrated men who wrote on eclipses which happened on two separate occasions, more than a century apart from each other, that such was not the case. Dr. Halley is very precise in his language, and says that before the sun entirely disappeared the light was so faint that he could look on the sun for more than a minute of time, even through the telescope, whereas his eye could not endure the emerging beams from the first instant; and according to Schumacher the horizon appeared to burst into a state of violent conflagration on the first instant of the sun's reappearance. Surely this language unintentionally explains the phenomenon according to the theory I am advocating; for after the sudden but temporary suspension of the sun's chemical or ignipotent power, chemical changes went on in that part of the earth's atmosphere where the dark spot was formed, because they say the thermometer fell 11°, and probably this newly-formed inflammable matter would be in a state of incipient combustion, something like the ignis fatuus, which caused it to appear like blue pale vapour as described by Schumacher, and the moment the smallest part of the sun could transmit ignipotent power to excite it to burst into the semblance of a mighty conflagration, says one, and the emerging beams were unbearable, was the language of the other. Had Schumacher, in explaining this sudden, unexpected, and startling phenomenon, selected language for the purpose of confirming the theory I am advocating by his explanation, he could scarcely have chosen more appropriate words.

In returning to a total eclipse of the moon, I shall principally confine my remarks to the copper-coloured appearance which the surface of the moon presents on these occasions, because as the body of the earth is much larger than that of the moon it forms a complete barrier to the transmission of

light, and also of chemical or ignipotent power, so that neither one nor the other can reach the moon under such circumstances, hence the whole surface of the moon is what is called eclipsed; but instead of being quite dark, as we should naturally expect the surface of the moon would be under such circumstances, for it is at the same time in a line with the dark part of the earth's surface, we see it covered with a considerable flood of copper-coloured light. How can the presence of such light be accounted for in the entire absence of the sun, its supposed fountain of light? Many attempts have been made to try to account for the presence of such light by supposing that light from the sun must be bent or refracted in some unaccountable way by the earth's atmosphere, and thereby thrown on the surface of the moon to produce the light we see there during the time of a total eclipse; but that such is the case is so improbable—nay, so impossible—and such explanation so unsatisfactory, that the majority of thinking philosophers discard it altogether, and say they can only understand the presence of such an amount of light by supposing it to consist of some kind of self-luminosity existing over the moon's surface. By such an expression of opinion these philosophers are unintentionally supporting the theory I am advocating; and indeed it is the only theory capable of supplying a satisfactory explanation. In applying it to elucidate the phenomenon it will be necessary to draw your attention to the fact that one of the moon's days is equal to 27½ of our days, consequently such fuel as we have over our earth to supply it with daylight would be very unsuited to keep burning during a period of time that would be equal to 27½ of our days. If I wanted a light to burn sufficiently long to enable me to seal a letter burning a common lucifer match would serve my purpose, but if I wanted a light to last a whole evening I should burn a candle. In the case of the lucifer match, if blown out there would be an end of it at once; but in the case of the candle, if blown out after it has been burning some long time the silvery-coloured light would instantly be gone, but the copper-coloured fire would be seen in the snuff for a long period of time. I am not advancing this as a parallel case with the light on the moon, but only as a sort of auxiliary illustration, for it must be evident to all of us that our Creator, in providing two planets with fuel, in the one to last burning 27½ of our days, in the other only to last burning one of our days, the nature of the fuel He would supply would be very different in the two cases. To attempt a description of the nature of the fuel which supplies the moon's surface with light and heat would be pure presumption, but be that fuel what it may there can be no doubt but that it is suited to the purpose it is intended to serve, and I have no doubt you will agree with me that the copper-coloured light seen on the surface of the moon, under the circumstances stated, can only be produced by some self-luminosity existing over the moon's surface in accordance with the views I have had the honour of placing before you; and that the facts I have selected from the records of celebrated astronomers, together with the explanations I have given, are sufficient to convince you that eclipses of the sun and moon do not stand as stumbling blocks in the way of the theory I am advocating.

The nature and constitution of the sun are the next point to which I solicit your attention. There are two theories in circulation on this subject besides that I am advocating, which, for the sake of regularity, we will call the third. The first theory supposes the sun to be an immense mass of solid incandescent matter, according to Sir Isaac Newton's estimate 2,000 times more hot than red-hot iron; and, according to calculations recently made by philosophers, glowing with flames of light 320 times more vivid or brilliant than the flame known as the magnesium light; from this mass of fire and flame the solar system is said to be supplied with light and heat. The second theory, which I believe first emanated from the late Sir Wm. Herschel, is, that instead of the sun being a mass of intense fire, as the first theory supposes, it is a large habitable globe, surrounded by a glowing luminous atmosphere, and that it is from this atmosphere of brilliant flame that the solar system is supplied with light and heat. This second theory was commonly received till recently, but in consequence of a German philosopher discovering in what is called the solar spectrum certain dark lines, and finding that the flame of a lamp, when impregnated with the vapours of certain metals, produced a spectrum with corresponding lines, he inferred that the vapours of the same metals must exist over the sun's surface, whence the light is supposed to emanate which impinges on the so-called solar spectrum, and that the body of the sun must be in an incandescent state to melt and vapourise the various metals. In consequence of this discovery the opinions of philosophers in the present day appear to incline in favour of the

first theory. The third theory, which I am advocating, supposes the sun to be a habitable globe, similar to the earth, only many thousands of times larger; that it possesses an atmosphere containing inflammable gaseous matter similar to the earth; that such inflammable gaseous matter undergoes combustion and produces light and heat in the sun's atmosphere; and that all the light and heat produced therein never extend beyond it, but fall on the surface of the sun and are absorbed by it, precisely in the same way as I have described light and heat to be generated in the earth's atmosphere and supplied to the earth's surface. There is a fourth, called the undulatory theory, which supposes light and heat to be only "effects," the same as sound; and as sound requires a material medium, such as the atmosphere, through which to transmit its waves or undulations, so the undulations which "effect" light and heat require a similar material medium to transmit them. The believers of this theory suppose that space, between the atmospheres of worlds, is occupied by what they call "a material ethereal medium," through which, they say, the waves or undulations of light and heat are transmitted from the sun to the earth, &c. Two existing facts will be sufficient to prove the non-existence of the supposed ethereal medium in space, and thereby dispose of the theory in question. The first is the fact that empty space offers no opposition to the rate of speed of the earth's motion of 68,000 miles an hour in its orbit; whereas if it were filled with the supposed material medium, however attenuated such matter may be, it must oppose and retard the earth's motion in its orbit, which is the reverse of the fact. The second fact is, that comets, when receding from the sun, always travel with their tails in front of their nuclei, without any change being produced in the form of their tails or in the position of their tails in relation to their bodies; whereas if space were occupied by matter, however flimsy, it must affect the very light attenuated matter of which the extremities of the tails of comets are composed: and as neither the earth's rate of motion in its orbit is retarded, nor the tails of comets are affected while moving through space at such immense velocities as they are known to be, is proof positive that space must be free from all materiality whatever.

The undulatory theory of light and heat being thus disposed of, we have before us three conflicting theories. Their respective claims to truth can only be ascertained by the investigations of, and the inferences drawn from, such experiments and known facts as are admitted by all parties to hear upon their respective theories. We will take them in succession, and as far as may be compare them collectively.

In considering the first theory which supposes the sun to be a solid mass of incandescent matter—fire; we cannot do better than compare it with our ordinary fires. The first question which this theory suggests is, how is fuel supplied to keep up such a fire? We have no fires on the earth of equal intensity with that which is supposed to constitute the sun, and yet, in our ordinary domestic fires, we expend every twenty-four hours a bulk of fuel fully four times as great as the bulk of the fire itself, and in some of our locomotives, steam vessels, and manufactories, a bulk of fuel fully equal to the bulk of those fires is expended every hour; and yet the fiercest of them is very much less intense than that fire which is supposed to constitute the body of the sun. Whence comes the supply of fuel necessary to keep it burning? Comets cannot supply it, because all of them which are seen to approach the sun are also seen to leave it again after they have turned round the narrow bends of their orbits. Planets cannot fall into the body of the sun as fuel, because none of them have been missed from the earliest period of recorded history; and there are no other bodies known to exist in the solar system that can fall into the sun as fuel. But even if comets and such bodies as are known to exist in the solar system, were to be used as fuel, how long would they last? The sun itself is so large that it would make 1,380,000 worlds the size of the earth. In order to realise an approximate idea of the relative proportions of the sun and earth—a Frenchman, a short time ago, filled a certain measure with grains of wheat and counted the number of grains that the measure contained; after doing so, by dividing 1,380,000 by the number of grains that the measure contained, and multiplying the measure by the product, he found that 1,380,000 grains of wheat will measure eight bushels. Therefore, in size, the earth is to the sun as one grain of wheat is to eight bushels of wheat.

We will now suppose that the solar system contains in all 100 planets, satellites, and asteroids. Some are much larger, and some are much smaller, than the earth; but, for the sake of argument, we will admit that on an average they are 100 times larger than the earth—say as much larger than the

earth as a walnut is larger than a grain of wheat; and suppose that 100 walnuts would fill a half-gallon measure—say a gallon if you please, for I can afford to be liberal—and that they were at one time thrown into the sun as fuel, then, as one gallon is to eight bushels, so is one minute to one hour less four minutes, and supposing the sun would consume, hourly, a bulk of fuel equal to its own bulk. If the theory we are considering were reduced to practice this minute, and the planets, satellites, and asteroids, were all thrown in as fuel, then, according to this mathematical calculation, the solar system would expend itself by combustion in one hour and 56 seconds of time, and become annihilated. The second theory, or Sir William Herschell's theory, supposes the sun to be a habitable world, and that the light and heat which supplies the solar system are generated by combustion going on in the sun's atmosphere. According to this theory we can only infer that the sun's atmosphere must be composed of inflammable gases similar to the earth's atmosphere, and that the combustion going on therein somewhat resembles that which produces flame or light in our ordinary gas-lamps. Supposing this theory to be correct, a supply of gas must be kept up to feed the flame over the sun, upon the same principle as gas must be supplied to feed the flame existing in our ordinary gas-lights. The flame of one of our ordinary gas-lamps, if condensed into a compact mass, would not measure a cubic inch of solid flame; to keep this burning, five cubic feet, or 8,740 cubic inches, of gas are consumed every hour, that is, a bulk of gas equal to 8,740 times the bulk of the flame it feeds, is consumed; and taking the specific gravity of hydrogen gas at 1,600 times less than water, and that of coal at 1 and one-third more than water, it will be found upon calculation that about $3\frac{1}{2}$ times more actual weight of gaseous fuel will be consumed every hour to keep a certain sized mass of gaseous flame in a state of combustion, than the weight of solid fuel which we have calculated as being consumed in our fiercest fires to keep up a mass of solid fire of the same size. If, then, the solar system were lighted and heated by means of gas instead of by means of solid fire, whence would come the supply? Experience fully satisfies us that the expenditure of fuel would be nearly as great in the two cases; therefore, if all the matter comprised in all the bodies in the solar system, including the sun himself, were actually converted into gas, it would soon be expended if the second theory were reduced to practice, and the solar system dispersed into space and annihilated.

In addition to the solid and gaseous fuel already noticed as necessary to the first and second theories we are considering, a supply of oxygen gas would be necessary to support the combustion of the solid fuel and the gaseous fuel also. In case of terrestrial fires and gas lights such oxygen gas is obtained from the earth's atmosphere; and in order to give you an idea of the prodigious quantity consumed I will read a short extract from a scientific account recently published of the operations going on in the Dowlais iron furnaces at Swansea, South Wales. It says, that "on an average 880 tons of ore, fuel, and limestone are thrown into each furnace weekly, and that, to enable these to act upon each other, not less than 2,820 tons of atmospheric air are driven in by the blast; that is, nearly three times as much air by weight as of solid materials." In order that you may fully comprehend my meaning, it may be necessary to explain why such oxygen gas would be necessary to the state of combustion which the first and second theories suppose to be going on over the surface of the sun. While doing this I will, at the same time, expose the fallacy of a favorite topic, which is passing current among philosophers in the present day, about heat from the sun having been stored up for thousands and millions of years in the coal we dig out of the earth. They also talk about the heat we obtain from ordinary fires, as though it was all previously stored up in a latent state in the coal, and that it is brought out during the process of combustion. There never was a greater mistake. All agree that the coal we burn was once wood. During the growth of such wood on the earth the hydrogen contained in it was obtained by decomposing water, and the carbon was obtained from the earth or the earth's atmosphere during its growth also; therefore, neither the hydrogen nor carbon we find in coal ever came from the sun. I have already explained how hydrogen gas is formed, so that, in order to enable you to understand my meaning, we will suppose the hydrogen all got rid of in the fire, and nothing but carbon is left—a sort of coke fire, which you all know gives out a greater quantity of heat than a coal fire. I will now explain how this heat is produced. The oxygen gas, which forms one-fifth of the earth's atmosphere, contains a large amount of latent caloric. As this gas chemically combines with particles of carbon or particles of coke it becomes carbonic acid gas. While doing so, it finds that it cannot hold in

a latent state as much caloric by 7,226° as it did before it underwent the change from oxygen gas to carbonic acid gas; therefore, this 7,226° of caloric being set free during the process of combustion it changes its state from latent caloric to sensible heat, and being then in connection with the fuel of which such fire is composed it saturates it with such large quantities of heat as to cause it to become incandescent as we see it is. Thus you will see that the carbon in the coal was first obtained from the earth, and the caloric which becomes heat during combustion was previously contained in the earth's atmosphere; consequently, such heat was not previously stored up in coal for thousands of years, but in the earth's atmosphere, where fresh quantities are daily being stored up, and whence fresh supplies are continually being brought out for use as wanted. It is upon this principle that my calculations respecting the combustion going on in the sun, as the first and second theories suppose, have been based; for unless such combustion were produced by different kinds of fuel constantly coming in contact and chemically combining as they come together, it would not be lasting; for if the fuel of which the sun is composed existed together in the proper portions for combustion, instead of having to come in contact in timely order during combustion, it would all explode at once spontaneously like a bladder of compound oxygen and hydrogen gas—a barrel of gunpowder and a mass of gun cotton. Therefore, in order that the fire composing the sun should remain burning as long as one hour and fifty-six seconds of time, it would be necessary it should be supplied with oxygen gas or some similar kind of gas in the same way as our ordinary fires are supplied. To keep such a fire as the sun is supposed to be continually burning would require a shower of planets to fall into it us thick and fast as hail stones fall on the earth during a hail storm, and a spherical globe of atmosphere that would fill the orbit of Neptune, the diameter of which is 5,740,000 miles, would not last longer than a year. Whence is this fuel and air supplied to the sun? Echo alone answers, Whence! for the first and second theories we have been considering have no foundation in fact.

(To be continued.)

NOTES OF NEW WORKS.

The church of the Venerable Order of Friars Preachers, in the ancient city of Limerick, has lately been receiving some important features in the way of adornment. The new chancel, built about three years ago, has been the point which has called for their earliest care and attention, and a high altar and reredos, and stained glass eastern window, with some rich decorative colouring in the roof and walls, are the features of new interest. The whole of the altar, reredos, tabernacle, and throne, are executed in various marbles, statuary and Sicilian forming the principal material. The altar is panelled in front with three exquisite bas-reliefs from the chisel of Mr. Bolton, of Worcester, representing the Good Shepherd drawing from brambles the strayed sheep; Our Lord raising Lazarus from the tomb, and Mary Magdalene at the feet of the Lord. Running quite across the chancel, but considerably detached from the eastern wall, the reredos is composed of an elegant open arcade with green shafts, having basis capitals of Carrara marble, with arches and cornice in Sicilian. The tabernacle, containing an iron safe lined with cedar and silk, with highly gilt and engraved doors, set with crystals, occupies the centre of the altar. The throne above it rises up to a considerable elevation, but yet not so as to interfere with the window beyond, and terminates in a rich group of pinnacles and gables, borne on, and inlaid with various coloured marbles, and supporting as a terminal an angelic statuette. This work has been executed in the most creditable manner by Mr. P. Scannell, of the Cork Marble Works, under the direction and from the carefully detailed drawings of the architect, Mr. G. Goldie, London. The great eastern window, which consists of five lights, with elaborate tracery, is filled in with a stained glass representation of Our Lord's Transfiguration. This is a work of unrivalled excellence by Wailes, of Newcastle. The decoration reflects the highest credit on the artist, Mr. Hodgkinson, of Cork.

A new dwelling is to be erected on the Tuskar Rock, off the coast of Wexford. Tenders before 21st inst.

A clock tower is in course of erection at Baker's place, Limerick, as a testimonial to Alderman Peter Tait, the present mayor; total height 65 feet, and the cost £750. Mr. W. E. Corbett, city surveyor, is the architect, and Mr. John Connolly the builder.

A branch of the Union Bank of Ireland (limited) was opened at Bruff, Co. Limerick, on the 12th inst.

Extensive alterations and additions are being made to the City of Limerick Gaol, with a view of carrying out the "separate system," at a cost of about £4,500. Mr. W. E. Corbett, architect; M. Clayton, builder.

The cost of constructing the Belfast new water-works, that is to say, of making the reservoirs, conduits, culverts, &c., is estimated at £95,000. Besides this there will be law, land, and engineering expenses, and a sum of £6,000 to be paid to the Marquis of Downshire for water rights. To cover all these expenses the Town Council have applied for an Act of Parliament allowing them to borrow £164,000.

The new sugar house erected by the Messrs. Bewley, Moss, and Co., is now in full working order. The magnitude of the concern may be described by saying that at the present time it can turn out 200 tons of sugar per week. Provision, however, has been made to enable the out-turn of 400 tons per week.

The Belfast Town Council have decided against building a new Town Hall, but instead will erect in the present Pork Market a building which will afford accommodation as a Police Court, Council Chamber, &c., at a cost of £5,000 or £6,000.

Four semi-detached villas are in course of erection at Kiltrush, Co. Limerick, for Thomas Revington, Esq. Mr. William Fogerty, of Dublin, architect; Mr. P. Scanlon, of Limerick, builder.

A neat block of houses, four in number, is fast approaching completion on the Ranelagh-road, near the railway bridge, for Mr. S. Griffin. The basement is of granite, and the rest of the work of Co. Dublin stock brick, with red and white brick dressings, cornices, &c. The total cost will be about £2,000. Mr. W. Fogerty is the architect, and Mr. James Beckett, the builder.

The Board of Trinity College has granted leave for the erection of a memorial window in the Chapel, in honour of the Very Rev. Richard Graves, Dean of Ardagh, Professor of Divinity in the University of Dublin, and author of "Lectures on the Pentateuch." The cost of the window is estimated at £300, which will be subscribed by members of the late Dean's family. Upwards of £130 have already been received.

CORRESPONDENCE.

SS. PETER AND PAUL'S CHURCH, CORK.

TO THE PROPRIETOR OF THE DUBLIN BUILDER.

DEAR SIR,—Some time since you drew my attention to some correspondence on the subject of an alleged settlement in the tower of SS. Peter and Paul's Church, Cork. As the author of the article which gave rise to the discussion, I sent you some explanations of my views on the subject, which are reproduced in a note following Mr. Ashlin's letter in the DUBLIN BUILDER of the 1st inst. Thanks, however, I suppose, to my not very legible scrawl, and the compositor's ingenuity combined, I cannot say that the said explanation is very intelligible. As there is very little use in attempting to correct it now, perhaps you will be so good as to state that my intention was to have expressed my perfect satisfaction as to the sufficiency and soundness of the tower, and to add my perfect conviction that what gave rise to the original remarks on the subject, is but a trifling local displacement or disturbance which no amount of skill and care could be expected to avert in every portion of an elaborate work; more particularly when built of a hard and brittle stone of the nature of Cork limestone.—Yours very truly,

THE WRITER OF THE ARTICLE
IN "DUBLIN BUILDER," OF
JANUARY 15TH.

L A W.

Dockrell v. Findlater and Co.—Petition filed by Mr Dockrell, of South Great George's-street, to restrain respondents from further proceeding with a certain erection at the rear of their warehouse, which adjoined the warehouse of petitioner, upon the ground that if completed it would have the effect of diminishing the supply of light and air to petitioner's warehouse. It was consented that the injunction should go, pending the filing of an answer.

Lee v. Lefroy.—This case was partly heard before Lord Chief Justice Monaghan at the sittings after last Term. Plaintiff claimed a sum of £112 5s. 5d., as balance due for extra works, in building a house for defendant, at Bray. The result of the investigation has been to show that the plaintiff was over-paid, and a verdict has been accordingly entered for defendant, with 6d. costs.

Girdwood v. the Belfast Water Commissioners.—Action brought on a covenant in an indenture made between plaintiff and defendants, that in consideration of plaintiff supplying the town basins of Belfast with water, defendants should pay £100 a year, with the condition that every day on which the water did

not reach to a certain height they were at liberty to deduct £5. The defence was a set-off, the allegation being that plaintiff had not fulfilled his contract, the supply of water not having reached the stipulated height, for which they had made the deductions referred to, and which in the aggregate far exceeded the three quarters rent claimed. Judgment for defendants, with costs.

Swallow v. The Board of Works.—Action by plaintiff, a builder and contractor, to recover the amount due to him under his contract for rebuilding the Phoenix Pillar in the Phoenix Park. His contract was for £323, and his case was that, after he had expended nearly the whole amount upon the work, defendants, under a provision of the contract, took up the work from plaintiff, stating that they were dissatisfied with the manner in which it was being executed. They entered into a new contract with another person for £300, and sought to deduct the whole of this sum from amount claimed by plaintiff. They lodged £23 in court. The case had not concluded previous to our going to press.

M'Evoy v. the Drogheda Harbour Commissioners and Patrick Donor.—Action brought by plaintiff, a widow, to recover damages, at £2,000, from the Drogheda Harbour Commissioners and their engineer, Patrick Donor, for trespass, by improperly working a quarry adjoining certain reclaimed lands, the property of plaintiff, by reason whereof the tidal waters of the River Boyne were allowed to flow in upon and destroy plaintiff's property. The defences denied that the property damaged was plaintiff's, and also denied that they had been guilty of negligence in the working of the quarry. This case was not decided up to our going to press.

An arbitration between the Royal Marine Hotel Company, of Kingstown, and Messrs. Cockburn and Sons, contractors for the new building, presided over by Mr. W. G. Murray, architect, has resulted in an award of a sum which may be roundly stated as £24,000 as the cost of the new building. Surveyor on behalf of the company, Mr. Benjamin Patterson; and on the part of the contractors, Mr. Henry Dudgeon.

MISCELLANEOUS.

The prospectus of a company under the title of "The Irish Sea Fishery Company," has been issued. The company is established for "the taking, curing, and selling of fish, more especially in the vicinity of Dublin Bay, with more system than hitherto; using better appliances, and generally endeavouring to develop the great resources of the Fisheries of Ireland." It is proposed to use a small steamer for the purpose of towing out the boats to the fishing grounds in calm weather, and also of relieving them of their takes of fish at sea. With proper management and judicious expenditure of capital in this undertaking, the shareholders will no doubt receive large returns in the way of dividends. The capital is fixed at £30,000 in 300 shares of £100 each. The directorate is composed entirely, we believe, of our fellow-citizens.

The parish church of St. Mabe, near Falmouth, which dates from 1276, was struck by lightning on Saturday morning, and has received such severe damage as to be beyond repair.

Mr. Foley, R.A., has just completed the model for his bronze statue of Lord Herbert, to be erected in front of the War Office, Pall Mall. The figure, in Peer's robes, is standing; the head downcast, absorbed in thought; face partially supported by the half-closed right hand, while the left upholds the elbow of the former. The drapery forms are rich and varied, but so arranged as to sustain by their repose that sense of meditative abstraction centred in the head.

The next evening scientific meeting of the Royal Dublin Society will be held on Monday evening next, when a paper "On the Herring Fisheries of Ireland" will be read by William Andrews, Esq.

The Royal Agricultural Society offers for competition, in each province of Ireland, a gold medal, or bronze medal with £10, to the landlord or occupier who shall have drained the largest quantity of land in the best manner—not less in any case than 25 acres—between the 31st October in one year and the 31st December in the following year. A challenge cup—General Hall's—value £50, is to be competed for by the winners of the provincial gold medals, and to become the property of whoever wins it three times.

A discovery, interesting alike to the geologist and archaeologist, has been made on the shores of Lough Swilly. Mr. Harte, the County Surveyor of Donegal, has found the remains of the Jokkenmoddings, the shell heaps of the aboriginal inhabitants of Ireland, similar to those which have been found in the Danish islands.

At the last meeting of the Municipal Town Council a resolution was passed that the money received from carriage rents, licenses, fines, and other local contributions which had hitherto been given towards the support of the metropolitan police force, over whom the ratepayers have no control, should be paid into the borough fund, in aid of paving, cleansing, and lighting—the receipts to be appropriated, in the first instance, to the rebuilding of Carlisle Bridge; and that in the event of the government refusing to transfer the carriage rents to the relief of the ratepayers, a petition should be adopted to the Imperial Parliament, praying that a grant might be made from the Consolidated Fund for the purpose of rebuilding Carlisle Bridge.

The drawing for the "Hayes" collection of paintings is postponed until the 20th inst.

A fund is being raised to purchase the Windele Manuscripts for the Royal Irish Academy. These manuscripts illustrate the language, history, antiquities, and folk-lore of Munster; they extend to 130 volumes, and are offered by Mr. Windele's executors for £100.

Mr. Hook has been entrusted with the execution of the full-length portrait of Mr. Benjamin Whitworth, M.P., for the new Town Hall, Drogheda.

A meeting of the Belfast Architectural and Engineering Association was held on the 2nd inst., in the Museum, College-square, when a paper was read by Mr. Macassey, on "Subaqueous Foundations." The chair was occupied by the President, Professor James Thompson. Mr. Macassey gave a very interesting description of the different kinds of machinery used in pile-driving, and went to a considerable extent into the subject of the formation of foundations by means of caissons and coffer-dams, illustrating his remarks by reference to several coloured diagrams of work already executed. At the close of the paper an animated discussion ensued, and Mr. Macassey replied to some questions that had been put to him.

TENDERS.


For the "Tait Testimonial," Limerick—

Martin Clayton	£800
Patrick Scanlon	784
William Wallace and Son ..	784
John Connolly (accepted) ..	750

BANKRUPTS.

Samuel McDonnell, C.E., Cook-street, Cork.
Pierce Byrne, carpenter, Arklow.
John Wall, builder, Stradbally.
Samuel Davis, Middle Abbey-street, Dublin, and Hibernian mills, co. Dublin, glass dealer and cement manufacturer.

SPECIAL NOTICE.

 We again request that Subscribers will kindly remit to the office the amount of Subscription for current year (reduced to Six Shillings per annum—by post, Eight Shillings).

Subscribers and Advertisers who have been furnished with Accounts from the Office of this Journal, will please forward the amounts, with as little delay as possible, to the Proprietor.

TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

Books for Review in this Journal should be forwarded to the Publisher, at the Office, 42, Mabbot-street.

All Communications respecting the DUBLIN BUILDER, should be addressed to MR. PETER ROE, 42, Mabbot-street, to whom all payments for Subscriptions and Advertisements must be made.

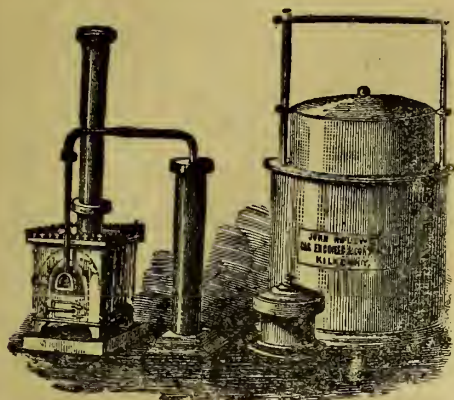
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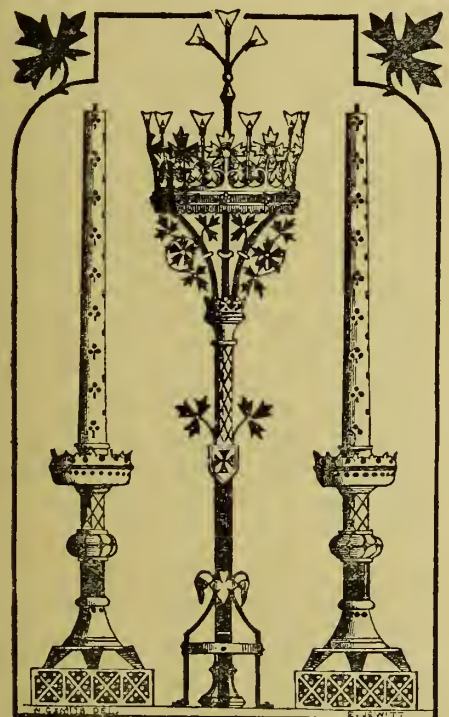


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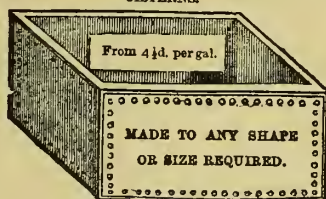
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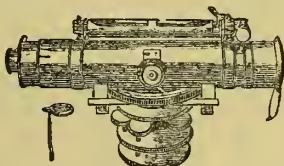
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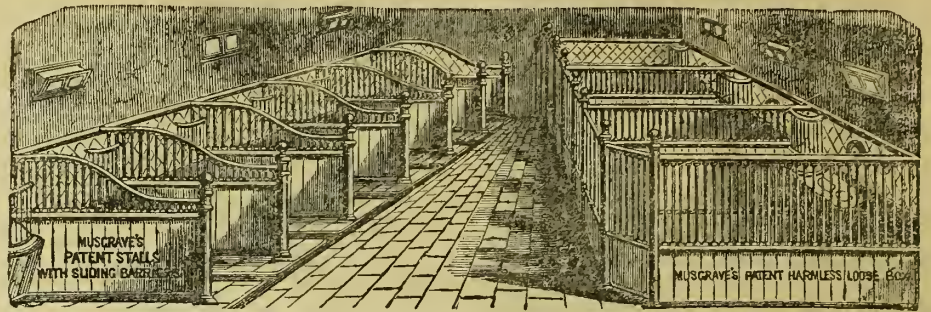
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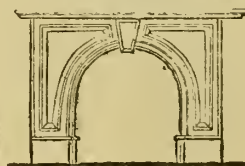
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STONES furnished, to any extent, in Blocks or Scantlings on the shortest notice, from the above extensive and well-known Quarry.

This Stone is now largely used in Ireland for the ashlar fronts of Public Buildings, Noblemen's Mansions, cut stone dressings, interior columns and arches of churches, dressings of schools and villas, and is well adapted for every purpose to which cutstone is applied.

The facilities for shipping are unsurpassed, being connected by private railway with the Forth and Clyde Canal (within a few miles of the Clyde), where vessels of upwards of a hundred tons can be loaded in a few hours.

L., G., and Co., will be happy to furnish Architects, Builders and others with list of prices at the Quarries, free on board, and freight to any port in the kingdom.

All orders promptly and carefully shipped.

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MANUFACTORY AND MILLS—CROWN-ALLEY.
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CELEBRATED
LONDON ROMAN CEMENT,
LONDON PORTLAND CEMENT, and
KEENE'S MARBLE CEMENTS,
Now Sold at greatly Reduced Prices, by
C. LAVENDER,
66½, GRAFTON-STREET, DUBLIN.

TESTIMONIALS.

From WILLIAM TITE, Esq., M.P. for Bath, and Architect of the Royal Exchange, London.

House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have used both the sorts of Cement manufactured by your firm, and that of Messrs. Francis & Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good. I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant,
Messrs. White & Son. (Signed) WILLIAM TITE.

From R.O. MINNIE, Esq., Surveyor to Board of Ordnance, London.
War Office, Pall Mall, London, S.W.,
2nd March, 1864.

GENTLEMEN,—In reply to your request, I have much pleasure in stating my favourable opinion of the quality of your Portland and other Cements, which have been extensively used in the Public Works connected with the War Department at home and abroad, especially in several of the fortifications now being erected in this country. On all occasions within my knowledge the quality has been equal to that of any other manufacturer, and has given great satisfaction.—I am, gentlemen, your obedient servant,
(Signed) R. O. MINNIE, Surveyor.

FERGUSLIE FIRE-CLAY WORKS, PAISLEY.

GLAZED SEWER PIPES (Patent and Socket), and all Articles made of Fire-clay of superior quality, for Sale at the Depot.

No. 56, NORTH WALL-QUAY, DUBLIN.

ROBERT BROWN.

Also, DRAIN PIPES of all sizes for Field Drainage.
Prices very moderate.

CHIMNEY PIECES—in Italian, Belgian, Irish, and English Marble; suitable for Drawing-rooms, Dining-rooms, Bed-rooms, &c. A very large Stock to select from.

BROOKS, THOMAS & Co., Sackville-place, Dublin.

EIGHTH YEAR!!!!

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THREE PENCE EACH NUMBER.

THE DUBLIN BUILDER,

Illustrated Record

OF

ART, SCIENCE, INDUSTRY, AND MANUFACTURE.

ESTABLISHED 1859.

THIS JOURNAL is the recognised organ of the Architectural and Engineering Professions in Ireland. It carefully details all matters pertaining to Building and the Constructive and Decorative Arts, and chronicles the transactions of Scientific and Literary Societies.

After some consideration, it has been resolved, at a sacrifice, to reduce the price of this Journal to THREEPENCE for each Number, trusting that ere long the benefit of the change will be reaped in an increased circulation and a greater field of usefulness.

It is a matter of the deepest gratification to the promoters of the DUBLIN BUILDER to learn, as they do in many quarters, that the gradual improvement in the management, and more especially in the Illustration department, has given much satisfaction, and they have now to state that the reduction in price will not be followed by any falling off in the value of the paper, but by redoubled exertion to render it still more worthy of the support of the public in the Eighth Year of its existence.

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The Dublin Builder.

ILLUSTRATED RECORD OF ART, SCIENCE, INDUSTRY, & MANUFACTURE.

No. 149.

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MARCH 1, 1866.

1st & 15th
OF EACH MONTH.

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ILLUSTRATION:
GOTHIC MOLDINGS.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND, 212, GREAT BRUNSWICK-STREET. SESSION 1865-6.

THE PRESIDENT'S PRIZE OF £10, to be open to Competition by Students of the Institute or Members of the Class for Architectural Study. The subject to be a Villa, to cost not more than £2,000 nor less than £1,800, computed at 6d. per cubic foot measuring from the ground line to the upper side of wall-pate of roof. The competition to be stated on the Drawings. The Drawings to consist of plans of each floor, an elevation of each front, two sections, and at least one perspective. Scale, 8 feet to an inch. All Drawings to be figured both as to general dimensions and scantlings. An outline specification to accompany the plans. The Drawings to be prepared for hanging. The Drawings and Papers to be sent to the Assistant Secretary on or before the 1st day of June next, under the competitor's own name.

The decision of the prize will be made at the regular meeting of the Institute on the 21st of June, 1866, which will be specially summoned for that purpose. The judges will be three Fellows of the Institute named by the Council, who will be requested to take into consideration the experience and standing of the competitors, as well as the relative merits of the designs themselves. In case of no design of sufficiently high merit being sent forward, the Council reserve the power of withholding or dividing the prize; and should an unsuccessful design exhibit proofs of great merit, the author thereof will be awarded one of the medals of the Institute. The judges will report to the Council on each design submitted in competition. By Order,

JAMES H. OWEN, M.A., Hon. Sec.
Dublin, February 24th, 1866.

ROYAL DUBLIN SOCIETY.

SCHOOL OF ART.

Head Master—MR. EDWIN LYNE
Assistant do.—MR. JAMES HEALY.
Art Mistress—MISS MARY JULYAN.

The second session of five months will commence on the 1st March, 1866 for instruction in Elementary Drawing, Figure and Landscape Painting, in Oils and Water Colours, and in Architectural and Mechanical Drawing.

Classes for ladies and gentlemen, daily, except Saturday, from 10 to 3 o'clock.
Classes for artisans, males and females, from 9 to 11 a.m., on Tuesdays and Thursdays, males from 7 to 9 p.m., on Mondays, Wednesdays, and Fridays.

A prospectus setting forth the fees and hours of instruction will be shortly issued.

••• The annual examination of the works executed in competition for Local Medals and National Medallions will be held in London after the 20th March, 1866, and the examination of pupils of the school for prizes will take place in Dublin on the 12th, 13th, and 14th March, 1866.

••• The exhibition of the works executed for the Taylor Prizes and scholarships will be held on the 12th November, 1866.

Works intended for this Exhibition to be sent in on or before the 10th November, 1866.

Competitors for the Taylor Art Prizes are to apply according to a form to be had on application at the Society's House.

WM E. STEELE, M.D., Assist. Sec.
Kildare-street, February, 1866.

Contracts.

COUNTY OF KILDARE.

TO CONTRACTORS, BUILDERS, &c.

TENDERS will be received at my Office, Naas Court-house, from 10th to 17th March, for the execution of the following works, viz.:—
Building an ADDITION to the INFIRMARY, Kildare; sum not to exceed £150.

PIILING THE BANK OF THE RIVER LIFFEY near New-bridge, for a length of 10 perches, and keeping in repair for three years the whole of the Piling between Robert Grady's and Robert Kelly's Bridge, not to exceed £35 first year, £5 each following year.

Plans and Specifications for the above works will be open for public inspection at my Office, Naas Court-house, on and after the 10th day of March next; and Tenders will be opened on the morning of the first day of the Grand Jury assemble for fiscal business.

M. YEATS,
Secretary Grand Jury, Co. Kildare.

Naas, Feb. 19th, 1866.

CHARLES SHEIL'S CHARITY ALMS HOUSES.

TO CONTRACTORS, BUILDERS, &c.

PERSONS desirous of Tendering for the Building of the proposed Alms Houses for the "Charles Sheil's" Charity at Dungannon, Co. Tyrone, may see the plans and specifications relating thereto at the Office of Messrs. Lanyon Lynn and Lanyon, 64, Upper Sackville-street, Dublin; or at 2, Upper Queen-street, Belfast, on or after Monday, the 5th of March.

Copies of the quantities will be supplied. Tenders to be forwarded to the Governors of the Charity, under cover, to P. Oulton, Esq., Secretary, 62, Upper Sackville-street, Dublin, on or before Monday, 19th March, 1866.

NOTICE TO BUILDERS.

THE

ECCLESIASTICAL COMMISSIONERS
FOR IRELAND, on or before the 6th day of March, 1866, will receive Proposals for

EXTENSIVE WORKS TO BE EXECUTED AT THE CHURCH OF

St. PETER (Drogheda) Co. Lonth.

According to the Plans and Specification, to be seen in the hands of the resident Minister of the Parish.

The lowest Proposal will not necessarily be accepted. Each Proposal to be forwarded sealed, prepaid, and addressed thus:—

"Proposal for the Church of St. Peter, Drogheda,
"The Ecclesiastical Commissioners for Ireland, Dublin"

NOTICE TO BUILDERS.

THE

ECCLESIASTICAL COMMISSIONERS
FOR IRELAND, on or before the 16th day of March, 1866, will receive Proposals for

REBUILDING THE CHURCH OF

DUNBOYNE Co. Meath.

According to Plans and Specification to be seen in the Office of the Commissioners, No. 24, Upper Merrion-street, Dublin; AND FOR WORKS PROPOSED TO BE EXECUTED AT THE CHURCHES OF

BEAUCHAMP Co. Galway.

MONIVEA

ST. NICHOLAS (Galway)

OUTERARD

KILCOLEMAN Co. Mayo.

TASHINNY Co. Westmeath.

According to the Plans and Specifications, to be seen in the hands of the resident Ministers of the Parishes.

The lowest Proposal will not necessarily be accepted. Each Proposal to be forwarded sealed, prepaid, and addressed thus:—

"Proposal for the Church of
"The Ecclesiastical Commissioners for Ireland, Dublin."

NOTICE TO BUILDERS AND PAINTERS.

THE
ECCLESIASTICAL COMMISSIONERS
FOR IRELAND, on or before the 8th day of March, 1866, will receive Proposals for

PAINTING EXTERNALLY THE CHURCHES IN THE FOLLOWING LOTS OR SECTIONS:—

Each Tender must include one complete Lot, and the sum for each Church must be stated separately.

Lot No. I.

ST. ANNE	Dublin.	St. Mary's Chapel	Dublin.
ST. AUDOEN	"	of Ease	"
ST. BRIOE	"	St. Mary, Donnybrook	"
ST. CATHERINE	"	St. MICHAEL	"
ST. GEORGE	"	St. MICHAEL	"
ST. JAMES	"	St. NICHOLAS WITHIN	"
ST. JOHN	"	St. PAUL	"
ST. JUNE	"	St. STEPHEN	"
ST. KEVIN	"	St. THOMAS	"
ST. LUKE	"	St. WERBURGH	"
ST. MARK	"	SWIFT'S ALLAY	"
ST. MARY	"	TRINITY, Rathmines	"

Lot No. II.

BOOTERTOWN	Dublin.	TULLOW	Dublin.
KILL	"	CHRISTCHURCH, Bray, Wicklow	"
KILLINEY	"	St. PAUL'S, Bray	"
MONKSTOWN	"	DELGANY	"
RATHMICHAEL	"	GREYSTONES	"
STILLORGAN	"	NEWCASTLE, Wicklow	"
TANET	"	WICKLOW	"

Lot No. III.

INCH	Wexford.	GLENEALY	Wicklow.
ARKLOW	Wicklow.	KILBRIDE, Enorilly	"
BALLINACLAGH	"	KILLESKEY	"
CASTLEMACADAM	"	RATHDRUM	"
DUNGANSTOWN	"	REDROSS	"

Lot No. IV.

CASTLEKNOC	Dublin.	RATHFARNHAM	Dublin
CHAPELIZOD	"	WHITECHURCH	"
CLONDALKIN	"	CALRY	Wicklow.
CLOSSILLA	"	DERRAL-OSSORY	"
CRUMLIN	"	LARAH	"
KILTERNAN	"	POWERSCOURT	"
RATHCOOLE	"	"	"

Lot No. V.

KILDROUGHT, Cel-bridge	Dublin.	DONADEA	Kildare.
LEIXLIP	"	KILCOCK	"
LUCAN	"	KILL	"
NEWCASTLE LYONS	"	MATPOOTH	"
BALLINAFAGH	Kildare.	NAAS	"
CLANE	"	TAGHADOE	"

Lot No. VI.

BALLYMORE EUSTACE	Dublin.	DONARD	Wicklow.
TALLAGHT	"	DONOUGHMORE	"
TIPPERKVVIN	"	DUNLAVAN	"
CARNAWAY	Kildare.	HOLLYWOOD	"
RATHMORE	"	KILBRIDE, Blesington	"
BLESINGTON	Wicklow.	"	"

Lot No. VII.

BALLYSAX	Kildare	LACKAGH	Kildare.
CARAGH	"	MONASTEREVEN	"
FRIGHCULLEN	"	MORRISTOWN BILLY	"
GREAT CONNELL	"	NURNET	"
KILCULLEN	"	RATHANGAN	"
KILLISHEE	"	THOMASTOWN	"
KILMAGUE	"	"	"

Lot No. VIII.

BALLYKEANE	King's Co.	LEA	Queen's Co.
CLONETHURKE	"	MOUNTMELICK	"
GRASHILL	"	ROSENALLIS	"
KILLEIGH	"	St. MICHAEL'S, Port-arlington	"
CLONASLEE	Queen's Co.	St. PAUL'S, do.	"
COOLBANAGHER	"	"	"

Lot No. IX.

ATHY	Kildare.	KILBERRY	Kildare.
BALYSNON	"	KINNEAGH	"
CASTLEORMOT	"	NARRAGHMORE	"
FONTSTOWN	"	TIMOLIN	"

Lot No. X.

CARBERRY	Kildare.	CLONBULLOGUE	King's Co.
BALLYBUHLEY	King's Co.	KINNEAD	"
BALLYCOMMON	"	PHILIPSTOWN	"

[For continuation of Contracts see next Page.]

CONTRACTS—Continued.

Lot No. XI.			Lot No. XIX.			Lot No. XXVII.		
CLOGHRAN Dublin.	Lusk Dublin.		ASHCRAGH Galway.	KILGLASS Rosecommon.		BOHOE Fermanagh.	DEVENISH, Monca Fermanagh.	
COOLOCK "	MALAHIDE "		CASTLEBLAKENEY Rosecommon.	KILKKEVAN "		CLEENISH, Belnaleck "	INNISMALSAINT "	
DONABATE "	PORTMANOCK "		ATHLEAGUE "	KILLENVOY "		Do., Lisbellard "	FINNEE, Bundorad "	
FINGLASS "	RAHENTY "		AUGHRIE "	KILTOOM "		Do., Mullaghadun "	GARRISON "	
GLASNEVIN "	SANTRY "		BUMLIN "	LOUGHLYNN "		DERRYBRUSK "	THOBY "	
HOLMPATRICK, Skerries "			BALLYMOR "	ROSCOMMON "		DERRYVOLLIN "	LISNASKEE "	
Lot No. XII.			Lot No. XX.			Lot No. XXVIII.		
BALBRIGGAN Dublin.	KILLSALLAGHAN Dublin.		ABANAGH Rosecommon.	AMPLISH Sligo.		AGHAVEA Fermanagh.	BAR Tyrone.	
BALROTHERY "	NAULE "		ARDCARNE "	BALLYSUMAGHAN "		COOLTRAIN "	DROMORE "	
CLONMETHAN "	ST. DOULOUGH'S "		BOYLE "	CALRY "		MULLAFAD "	ERRIGLE, Portclare "	
GARRISTOWN "			CROGHAN "	DRUMCLIFFE "		TEMPO "	FINTONA "	
Lot No. XIII.			Lot No. XXI.			Lot No. XXIX.		
BALLYMACHUGH Cavan.	COLUMBKILL Longford.		EASTERSNOW "	KILNUMERY "		BELLECK Fermanagh.	MAGHERACULMONEY Fermanagh.	
DRUMLUMMON "	GRANARD "		KILBRYAN "	KILMACULANE "		DRUMKEERAN "	TEMPLECARNE "	
ANNADUFF Leitrim.	KILLOE DRUMILD "		KILLUCAN "	KNOCKNARKA "		IRVINSTOWN "	CASTLEARCHDALL "	
CLOON "	MOSTRIM "		KILMACRANNY "	LISSADILL "		MAGHERACROSS "	KILSKERRY "	
FENAGH "	SCRABBY "		KILMORE "	ST. JOHN'S, Sligo "		According to the Specification, to be seen in the hands of the resident Minister of the Parish.		
KILTUGHARD "	KILRONAN Rosecommon.					The lowest Proposal will not necessarily be accepted.		
KILTURID "	RATHASPECK Westmeath.					Each Proposal to be forwarded sealed, prepaid, and addressed thus:—		
MOHILL "	STREET "		BALLYCROY Mayo.	KILMORE MOY Mayo.		"Proposal for Painting the Churches in		
ABBEYLARA Longford.						"The Ecclesiastical Commissioners for Ireland, Dublin."		
Lot No. XIV.			Lot No. XXII.			TO BUILDERS.		
DRUMSHAMBO Leitrim.	KILLOE Temple-		ATHENRY Galway.	RENYTLE Galway.		TENDERS will be received from competent		
ARNAGH Longford.	MICHAEL Longford.		ARRAN "	ORANMORE "		persons for the ERECTION of a NEW ROMAN CA-		
BALLYMACORMACK "	MOYDOW "		BEAUCHAMP "	OUTERARD "		THOLIC CHURCH at TEMPLEFORT, CO. CAVAN, as a		
CASHEL "	RATHCLINE "		CLIFDEN "	ST. NICHOLAS, Galway "		memorial to the late Very Rev. Thomas Maguire, P.P., Bal-		
CLONBRONEY "	SHERLE "		ERISLANNAN "	SPIDALL "		lismore, according to the Drawings and Specification to be		
CLONGISH "	TASHINNY "		MONIVEA "	SELLERNA "		seen at my Office up to Thursday, the 8th day of March next,		
KILCOMMUCK "	TEMPLEMICHAEL "					on which day the Tenders are to be forwarded, sealed, and		
KILGLASS "	KILLENUMERY Sligo.					prepaid to me.		
KILLASHEE "	KILLERY "					WM. HAGUE, Jun., Architect.		
Lot No. XV.			Lot No. XXIII.			175, Gt. Brunswick-st., Dublin,		
ANNA, Belturbet Cavan.	KILLALLON Cavan.		AASTLEBAGH Mayo.	KNAPPAGH Mayo.		15th Feb., 1866.		
ARVA "	KILLOUGHTER "		ACHILL "	KILCOLEMAN "		DUBLIN BUILDING ASSOCIATION.		
BALLINTEMPLE "	KILSHANDRA "		ST. THOMAS'S, Achill "	MATO "		(ESTABLISHED 1858.)		
CASTLETERRA "	KILMORE "		BURRISHOOLE "	FURLOUGH "		TRUSTEES:		
CASTLERAHAN "	TEMPLEPORT "		BALLYHEAN "	WESTPORT, Aughavale "		James Haughton, Esq., J.P. Henry L. Fry, Esq.		
DENN "	TOMREGAN "		CASTLEBAR "	Do. Ayle "		Samuel Hudson, Esq.		
DERRYTHEEN "	URNEY "		CROSSBOYNE "	Do. Louisburgh "		Offices—12, EUSTACE-STREET.		
DRUMLANE "	DRUMREILY Leitrim.		DRUM, Belcarra "	BALLINLOUGH Rosecommon.		This Association has been in successful operation for seven		
DERRYLANE, Killeshandra "			KILMINA "			years. It is managed by a Board of Directors, all of whom		
Lot No. XVI.			Lot No. XXIV.			are interested in the Commerce of this City.		
ASHFIELD Cavan.	KILLENKERE Cavan.		BALLINROBE Mayo.	DUNMORE Galway.		To investors it offers a safe and profitable opportunity, by		
BALLIBORO' "	KILDROMPERTON "		BALLINCHOLLA "	HEANFORD "		moderate Monthly Payments as Members.		
BALLYJAMESDUFF "	LARAH "		BALLYOVIE "	KILKERERIN "		To Borrowers, for building purposes, it affords a means of		
BILLS "	LAVEY "		LONG "	KILKERERAN "		acquiring House Property, either for residence or letting, on		
DRUNGOON "	LURGAN "		KILCOMMON "	KILCONLA "		the lowest possible scale of repayment.		
DRUNG "	MULLOCH "		KILMAINE "	MOYLUGH "		Reports and full information can be had on application to		
KILLSHERDINNY "	MUNTERCONNAUGHT "		ROSS "	TUAM "		the Actuary,		
KNOCKERIDE "	SHERCOCK "		ANNADOWN Galway.	MOYLE & DEUM Rosecommon.		JOHN EDMONDSON, 10, Dame-street.		
Lot No. XVII.			Lot No. XXV.			PAPER HANGINGS. The largest, newest,		
KILLINAGH Cavan.	INNISMAGRATH Leitrim.		GALLOON, Newtown-	CLOUGH Monaghan		and most varied assortment in French, English, and		
KINAWLEY "	KILLARGUE "		butler Fermanagh.	CURRIN "		Home Manufacture, at a great reduction in price.		
DROMINISKILL Fermanagh.	KILLEGAR "		SALLAGHY "	DRUM "		EDWARD ROUNDS,		
KILLESHER "	LERGANBOY "		AGHABOG Monaghan.	EMATRIS "		HOUSE PAINTER, DECORATOR, AND ROOMPAPER		
BALLYMECHAN Leitrim.	MANORHAMILTON "		AGHADRUMSEA "	KILLEEVAN "		MANUFACTURER,		
CARRIGALLAN "	NEWTOWNGORE "		CLONES "	NEWBLESS "		5, HENRY-STREET, DUBLIN.		
CARRIDALEN "	OUTRAGH "					The Trade liberally dealt with.		
DRUMLEASE "	ROBINVERE "							
GLENLOUGH "								
Lot No. XVIII.			Lot No. XXVI.					
CASTLEMORE Mayo.	EMLYPADD Sligo.		BALLYBAY Monaghan.	MAGHERACLONEY Monaghan.				
STRAID "	KILCONDUFF "		BROOMFIELD "	MONAGHAN "				
ACHONRY Sligo.	KILFREE "		CARRICKMACROSS "	MUCKNOE "				
BALLYODARE "	KILLORAN "		DRUMSNAT "	SHANCO "				
BALLYODERE Chapel of Ease "	KILMACLIGUE "		KILLANY "	STRANODDEN "				
	TUBERCURRY "		KILMORE "	TULLYCORBET "				

BATH STONE OF BEST QUALITY.

RANDELL AND SAUNDERS.

QUARRYMEN AND STONE MERCHANTS, BATH.

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THE UNITED KINGDOM, FURNISHED, ON APPLICATION TO

BATH STONE OFFICE, CORSHAM, WILTS.

BATH STONE OF BEST QUALITY.

PICTOR & SONS, Quarry Owners and Stone Merchants, Bath.

Corsham Down, Box Ground, Farleigh Down, and Combe Down Stone.

List of Prices at the Quarries and Depots, also Cost of Transit to all parts of the Kingdom, forwarded on application to the
BATH FREESTONE WORKS, BOX, WILTS.

THOMAS HENSHAW & CO.,

WHOLESALE & RETAIL FURNISHING AND BUILDERS' IRONMONGERS,
AND GENERAL HARDWARE MERCHANTS,

5, CHRIST CHURCH PLACE, AND 15 AND 16, KENNEDY'S-LANE,

BEG to call attention to their extensive, varied, and well-selected Stock of Ironmongery in all its different branches. It consists of Parlour, Drawing-room, and Bed-room Grates; Kitchen Ranges, Sash Weights; Iron Rim, Mortise, and Stock Locks; Hinges of all descriptions; Wrought and Cut Nails, O. G. Gutters, Down Pipes and Fittings, Metal Skylights, Ventilating Bricks; Cast-iron Chimney-pieces, with and without Grates; Rabbit Traps, Fox Traps, Galvanized Wire Netting, Sheet and Perforated Zinc, Sink Traps, Furnace Doors and Frames, Hot Air and Plain Stoves, Cast-steel Digging and Manure Forks, Slashing Hooks, Rakes, Spades, Shovels and Hoes.

Manufacturing and General Ironmongers and Tool Warehouse—81, MIDDLE ABBEY-STREET.
Spade, Shovel, and Tool Works—CLONSKEAGH.

Agents for Perry's Patent Fire-proof Safes quality considered, they are the cheapest in the market. Builders are invited to inspect our Stock previous to purchasing, at

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The Dublin Builder.

VOL. VIII.—No. 149.

THE SENTIMENT OF DIRT.



NCE upon a time—as our grand fathers and grand-mothers learned in that notable horn book, the *Seven Champions of Christendom*—there abode in the west

country of England a certain good and valiant knight, St. George by name, who among divers other deeds that he did, slew a fierce and cruel dragon that lived in a marsh, and sorely vexed the people of that country, slaying and devouring day by day many thereof, which thing the neologists of our day will have it, is but an allegory, and our hero but the prince and prototype of modern sanitary reformers, in that he drained the marsh and scotched, not a mythical dragon, but a veritable pestilence engendered of the noxious “humours” of the place, which decimated the inhabitants of that damp unpleasant locality. A tradition dearer and more familiar to us of how one Patrick drove from Irish soil the venomous snake and slimy toad might bear an interpretation of a deeper and more poetic sort—the flight of the loathsome creatures of Sin before the advance of Christian light—but for the present it is in their most material form, as we were wont to accept them in the unquestioning faith of the nursery, that we desire to adopt these fables as illustrative of our remarks. Neither tale possesses the merit of great novelty, yet there is an aspect of both on which we think neither the narrators nor audience in juvenile days ever dwelt very much, and that is what may have been the respective feelings of the injured dragon and exiled reptiles under those trying circumstances. Master Tommy and Master Harry with the natural love of poetic justice implanted in the juvenile mind would no doubt have dismissed the consideration with short and forcible verdict of “served them right,” but in our maturer years, if we are to adopt them as illustrations of contemporary cases, the analogy would be imperfect if we wholly omitted this phase of our stories. We can well imagine that when our old friend the dragon was being spitted after the manner so graphically depicted on the obverse of that respectable coin the British crown piece, he did not all like it, and when under the pressure of circumstances—

“The snakes went smash,
The toads went splash,
Slap-dash into the water,
And the frogs committed suicide to save
themselves from slaughter,”

they did so under protest, and we can follow them to the limbo of departed reptiles and see them sitting in conclave to discuss their wrongs with watery Batrachian croak and spiteful Ophidian venom.

Tempora mutantur; the good knights are dust, and their swords are rust; that holy

staff of St. Patrick, so potent, was made a bonfire of at the Cathedral of the Holy Trinity at Dublin long ago when good Queen Bess reigned over the iconoclasts. The dragons and other things loathsome or hurtful to our commonweal are of another kind, and war is waged against them from the pulpit, the press, and the platform.

A very Hydra among modern dragons is Defiance of sanitary laws. We are beginning at last to discover what a dangerous one it is, and if we considered our own interests when we found it convenient to us we would promptly remember the advice of Mr. Hannibal Chollop and “cut it down for it means venom.” There is, we venture to say, no city in the three kingdoms where neglect of sanitary science has been greater than in the city of Dublin. Happily total disregard for it is a thing of the past. We have had in spite of ourselves a tolerably healthy city with a low death-rate, yet manifestly we have no right to plume ourselves and “count honours” on this score. We let things get worse and worse for many and many a year longer than we should have done. One of the last reforms which we had to chronicle with unmitigated satisfaction was the application of bye-laws under a new Act of Parliament to a wretched class of tenements. We refer our readers to a back number* of this journal for these bye laws, and we ask them to reperuse them attentively and say if they are not wisely framed, a great boon to the community, and no unjust interference with vested interests. Yet somewhat on the same principle as those ancient examples which are quoted above murmurs both loud and deep are now to be heard as these bye-laws are being applied. Stoneybatter is wrathful, and the Liberties as a more ecclesiastical quarter may be described as virtuously indignant, and, as in the days which preceded a bloodier revolution, the cries of the *sans-culottes* have made themselves heard at the palaces of their aristocratic oppressors, and Off-lane is clamorous in the ears of Sackville-street, but to tell truth not more noisily so than it has been any day or rather night these twenty years.

We were surprised that more than a year had been permitted to elapse after the enunciation of the new code of discipline for the lanes and alleys without any decided murmur of discontent having made itself heard; from which two things were to be inferred, either that the sanitary inspectors were not doing their duty, or that those affected had not quite realised the invasion of their long-unquestioned rights. The latter appears to have been the correct view of the case; and we observe that at last the owners of houses let in weekly tenements, more commonly known by the less euphonious title of “house-jobbers,” have now discovered that the servants of the Corporation mean purification and no humbug, and they have taken measures accordingly. A meeting has been held—a highly aristocratic and influential meeting of these worthy proprietors of houses let in weekly tenements, for we perceive that each “writes” himself down “armigero, and so-forth,” that is to say, two of these esquires at least append to their names the affixes C.E. and P.L.G. respectively. If the first of these represents the title civil engineer, we can only add that we scarcely expected to find a duly qualified member of an enlightened profession

in such company, and if the mysterious initials P.L.G. are to be construed as Poor Law Guardian, we can only say, a pretty guardian of the poor indeed. Here are the first two resolutions *verb. et lit.*, as moved, &c., on this important occasion:—

Moved by T. A. Bowen, C.E., and seconded by W. Leech, Esq., that we object to that portion of the bye-law that interferes with the internal arrangements of our tenants, or compels us under a penalty of 40s. to keep the glass, &c., in repair during the tenancy.

Moved by R. Smith, and seconded by James Hurst, Esq., that we object to that portion of the second bye-law that compels the person in the beneficial receipt of the rent or person whose name shall appear in the rate-book, to put in sewers, erect ashpits, water-closets &c., as in some cases the expense for same may average from £10 to £100, unless it can be clearly and distinctly proved that said person has a clear and substantial interest in his or her holding, that is to say, a person holding from year to year, or a person holding on lease with a short term unexpired, should not be compelled to pay these expenses, as they would have no security for their outlay.

Passing over the certain obscurity of sense involved in this last curiously constructed resolution—we are glad, if for nothing else, to register it as a curiosity of English composition—we beg to reply to the proposition enunciated so far as we can guess the intention of its framer. We answer that there is no real injustice done in compelling householders or landlords with a short interest in their holdings to execute these works. *They have no right to hold any property in want of these first essentials of decency and health.* Society cannot permit it. The holding of these wretched, unsewered, unventilated, filthy tenements, is not a matter between them and their tenants as they appear to assume, it is an offence against the community which must be treated with the same firm hand as any other. As for the argument advanced by certain orators at one of the house-jobbers’ meetings, that the result of this “inquisitorial, arbitrary, unjust, and tyrannical” conduct on the part of the Corporation will be to throw a mass of impoverished property on the hands of aristocratic landlords, we regard it as the emptiest and vainest of threats. These worthy house-jobbers are quite too well versed in the value of a shilling not to find out that there is money to be made even out of tenements with sewers, ashpits, and privies, provided at their expense.

But the gem among all the resolutions is perhaps the following. It has a touch of pathos which lends a dignity to dirt itself:

Moved by James Kennedy, and seconded by George Hughes, Esq., that we object to the fifth bye-law in its entirety on the grounds that the humble man’s house or his room should be sacred in its privacy, and no sanitary or other officers should be empowered to enter and examine, and inquire for sanitary defects at any time, within the precincts of his humble dwelling.

O sanctuary of Dirt desecrated as well as defiled! O the immaculate privacy of privies invaded! O Lares and Penates *passim* trodden under foot of the policeman! Here is a burst of feeling benevolence of sentimental landlord for model tenant. We would suggest, however, that this pathetic sentiment would have touched the public ear with more effect if it had emanated from a meeting of the jobbed instead of the jobbers. Does the “humble man” as a matter of fact object to the visits of the sanitary inspector? Has he any rooted antipathy to staunch roofs, cleanly staircases, ashpits, necessities, &c.? Is his conservative regard for bad smells so strong as his landlord would have us suppose? We are speaking of course of the typical, honest, and oppressed model working man, not of the humble pickpocket or unobtrusive thief, nor of those detestable “sub-jobbers” of human souls and bodies who make their hateful gain in some of those dens known as weekly tenements, and naturally have a constitutional antipathy to the blue coat

and brass buttons of the policeman. We do not desire to hold a body of men of at least decent character up to unnecessary scorn. Their conduct in this matter is to a certain extent natural, and we can quite understand the point of view of one of their advocates, who was of opinion that the "Corporation had not consulted their *interests* in framing these oppressive bye-laws." The practical aspect of the question is that a pressure from a powerful body of municipal electors will probably be exercised on their representatives in the Corporation to bring about a repeal of these bye-laws, and we warn the candidate for civic honours who may have the weakness to succumb to such pressure that his success obtained with such a compromise of principle will subject him to the scorn of everyone whose good opinion is worth having. Typhus, blood-poisoning, and a score of diseases, vice and crime and misery their attendants, these are the dragons which we have to slay in the lanes and alleys, and must do with no faltering purpose or swerving hand.

"BALD UNJOINTED CHAT."

SHAKESPEARE.

It is a source of the highest gratification to observe that the new-born vitality of the Institute of Architects which was so much to be desired, and which we once despaired of ever seeing, has developed itself in a most unmistakable way. Formerly the author of a paper was a *rara avis*, an audacious literary whale among reticent and retiring architectural minnows. Now, thanks to the good example set by the junior members of the profession who have at length ventured to raise their faltering notes among their elder brethren, an uninterrupted series of papers of more than ordinary excellence has been the fruit of this session. We have had the pleasure to gather this fruit into our garner, and are now presenting it in instalments to the readers of the DUBLIN BUILDER in its fresh state, but we announce with satisfaction that the papers which appear of most practical merit will probably be collected, conserved, and, carefully revised and edited, appear in the form of a small and compact volume. We are not able to prophesy as yet what standard of excellence and practical utility the coming papers may attain, but if the generality of them come up to the mark of Mr. Owen's address to the students in kindly wisdom, or in quaint dry humour to his contribution on the Formula (W.C.—W.), or in practical usefulness to Mr. E. Trevor Owen's "Perspective," and Mr. Drew's "Gothic Moldings," we anticipate a volume of at least average merit which will deserve a large circulation, and redound to the credit of the Institute.

The President, we have further the great satisfaction to announce, has manifested the warmest interest in the Class of Architectural Study, or Association, as we understand it is to be called in future, and he has given a practical proof of his feeling in the matter by offering a prize of £10 for the best design for a £2,000 villa, to be submitted in a competition open only to the students of the Institute, and the members of the Architectural Study Association, not including Fellows or Associates of the Institute. Three Fellows will be appointed as judges by the Council to examine and report on the designs, and it is understood that they are to be at liberty to take into consideration in framing their report the proficiency of the competitors with reference to age and standing in architectural education, and they are also to have power, if it should appear desirable from

want of sufficient merit, to recommend a division of the prize. Not to be outdone in generosity, the Council have resolved to offer one of the Fitzgerald silver medals, which have been reposing in tarnished seclusion for nearly twenty years, for the best set of drawings from measurement of the ancient Church of St. Audoen, in Corn-market. This is open to all fellows, associates, and students, of the Institute, without distinction. The President's prize is to be awarded in June, and the Council medal at the opening of the session in November. We accept this instalment of unwonted energy as an earnest of greater activity to come, and we confess to the present amount of vitality in that eminently lazy and apathetic body, the Royal Institute of the Architects of Ireland, being something more than we were prepared for.

THE NEW LAW COURTS, LONDON.

Far be it ever from the pages of the DUBLIN BUILDER to have part or lot in that pertinacious ventilation of "grievances" so-called, which is an unhappily distinguishing feature of a section of the Irish press. A practice which has a homely illustration in the conduct of a certain heroine of Fielding's or Smollet's—we forget which—who, making a journey by stage-coach, cried "undone!" "undone!!" with such pertinacity at every stage that her fellow-travellers, right-minded people enough in their way, began to doubt the sincerity of her outraged feelings, and to make a contemptuous joke of her insulted virtue. Still we venture to pronounce ourselves slighted in the selection of the architects who are to compete for the new Palace of Justice. In reply to a formal question in the house by Mr. BENTINCK the other night, the selected competitors were stated by government to be Scott, Street, Barry, Waterhouse, and—HART. Who is Hart? We confess to most culpable ignorance. Is his fame spread beyond the sound of Bow-bells? Is he a canny Scot? How does he come to be in such very unimpeachable company? Our grievance is this: we happen to have information that it was not a matter of inadvertence that a knot of favored architects of London and one Hart of Somewhere-or-another were selected, and that the very harmless compliment of including some Irish name was omitted. It was distinctly and pressingly urged we believe, some time before any definite steps were taken, and in the proper quarter with proper influence that it would be for the advantage of the public service in more ways than one if at least one Irish name were included in the list of invitations. If there were any possible injury to the public service involved by the adoption of such a course we would say nothing, but what harm or inconvenience *could* result from such a simple act of courtesy to Irish architects? If we were not able from our ranks to furnish a design equal in merit to those of the London competitors, we certainly never dreamt of asking the government authorities to accept it to the injury of the public service. Let the best man win. Stupid precedence or official inadvertence might be some kind of apology—bad enough too they would be. In this case it is neither one nor the other, and therefore a deliberate slight which we resent accordingly.

A DESECRATION.

"Some men there are," says Shylock, "love not a gaping pig. Some that are mad if they behold a cat, And some that when a bagpipe sings i' the nose"—it is unnecessary to complete the quotation. If the *Builder's*

choler *can* be stirred beyond the grounds of all decent moderation it is by the desecration or wanton effacing of some time-honoured memorial. Looking back for even the space of one short half century, the 'history of our highways' seems a writing in very sand. Every advancing wave, every ripple of the tide of progress seems inevitably to efface some local landmark, to blot out the last traces of some departed worthy, from the haunts that once knew him. Many of these we have daily to part with resignedly, for all our natural regrets. The march of improvement must not be stayed, but when we see a wanton aggression on one of our sacred spots, a stupid, vulgar, uncalled-for destruction of some of our brick and mortar relics, we could bring the aggressor with all our hearts to a drum-head court martial, and have him summarily condemned to have a very decided aggression made on a tender part of his body, which would bear some due proportion to the violence done by him to the tender feelings of all right-minded persons.

There was a certain quaint gabled house in Aungier street which, common grocer's shop though it was, was the resort of many a pilgrim. Never did the Dublin man who played "guide, philosopher and friend" to the visitor from afar omit to take him to have a look at its exterior—the outsides of buildings, we have on the authority of Mr. Jonas Chuzzlewit, are an inexpensive yet gratifying entertainment for country cousins—and but a few months ago we recorded with genuine pleasure that some one who did "good by stealth, and blushed to find it fame" had placed a modest tablet to record that here THOMAS MOORE was born.

In our earliest experience its crumbling old curved and pedimented gable gave it a picturesqueness in good harmony with its interesting memories. In later times it underwent some renovations which, however, did not wholly deprive it of its ancient character. A bust of the poet, which if not a work in the highest style of art, was at least not worse than the caricature of the same injured individual in College-street, adorned a niche in the centre of the front. It was but the other day we saw it in its pristine state, but what words can express our disgust and indignant wrath when we came again but yesterday, to find 'the bard was still there, but the gable was gone.' The respectable old brick front has given place to a staring mass of "wiggings" and "raddles," crowned with a paltry cement cornice and blocking. We have no language to describe the vulgar abomination of the whole thing, and when we think that it was for this a sacred memorial was sacrificed, we scarcely know how to contain our indignation. It is, perhaps, to be regretted that there is no act of Parliament to restrain vulgar idiots from such acts of Vandalism as this, but it is perhaps also as well for the spirited proprietor that it is not yet an indictable offence, and that he is not being tried by a jury of educated men, with some veneration for the memory of poor Tommy Moore. With what vast satisfaction would we preside as judge, and condemn him to suffer himself the most cruel of "wig-gings," to be "raddled" all over as symbolic of his unblushing effrontery and exposed in the public streets, to be "pointed" at with the finger of scorn, to be "struck" in every joint of his own, "raked," scraped," "needled," "scaffolded," and all sorts of unpleasant new fixtures fitted in his interior. Wishes these, it may be said, not very humane, and language rather strong, but people in a passion, as we are, are not to be expected to be measured in the expression of their wrath.

ON TIMBER AND DEALS.*

As it is of the highest importance that those interested in building should be familiar with the nature and properties of the materials used therein, and with none more essentially than those upon which the carpenter and joiner have to operate, I will endeavour in the following paper to bring a few data together, which may be of use to the architectural student, concerning timber and deals.

The soil in which timber trees grow, has much to do with their quality, different soils producing different effects upon the timber; the climate likewise in some degree determines their strength and fitness, inasmuch as the moisture or sappiness will be retained or pushed out, according as the tree is situated in a warm or cold climate. The position of a tree with regard to the compass will slightly alter the character of the wood; for instance, that part of a tree fronting the north is always found to be red, and to produce the hardest and most durable timbers, as all the moisture is pressed out, and the wood made more compact, the concentric rings are closer together; whilst that facing the south is found to be white, soft and sappy, and the concentric rings further apart. It will thus be seen that the heart of a tree is rarely in the centre. Where trees grow in forests, and are closely studded, and where they grow alone, and are exposed to the weather, the wood is different in the different positions. There are forests wherein the trees stand so closely together, that the rays of the sun cannot penetrate, and are situated in a good soil; the wood obtained from thence is always of a very tender nature, by reason of the continual shade, which makes it so, and is only proper for joinery. But where the trees grow alone, or in hedges, and are fully exposed to the sun, the wood will be hard, and fit for carpentry. The tree that grows in low situations, and grows rapidly, is never found to be so strong, or so durable, as those growing in exposed situations and drier soils. All the oak in the north is much stronger than that of the midland counties, and is closer in grain than the oak in the south. The tree is hardest and most durable when the growth is gradual, and is taken from the coldest places. The wood is generally bad when taken from a clay soil, as it has too much moisture; it is also bad when taken from the rich black loamy soil, for although the tree grows fast, straight, and large, the wood is too sappy, the soil being too rich for it. Generally speaking, the wood which is the longest growing is the hardest, strongest, and most durable. The driest woods do not last long, they easily rot. Those woods which are moderately dried are the best, they have more stiffness. Moderately dried wood is better than green for carpentry. It is a curious fact, that there is not much sap in those trees whose wood is naturally soft, as the lime, birch, and elder. As the moisture in timber causes it to sag when used as a beam, merely by its own weight, it is necessary, when using long beams in construction, to slightly camber them. The cambering must, of course, be obtained during the operation of trussing, and not by cutting.

The age of a tree is calculated by the number of concentric rings or layers, which appear by its cross section. If there be twenty rings, then the tree is twenty years old, if fifty, fifty, and so on, one ring being added every year; therefore, what is alburnum or sap one year, is proper wood the next, the new layers as they come being converted into wood. There are some trees in the north of Europe of 18 or 20 inches in diameter (which produce timber 12 or 18 inches square), where one can count nearly three hundred rings; and there are likewise some trees of 12 inches diameter, which are used for cutting into deals, where nearly one hundred rings can be counted. It is worthy of observation, that the character of the rings varies in different kinds of trees. In some, as in the oak and elm, they are very distinct, in others, the distinction between the rings is so small, as scarcely to be recognised, the texture of the wood being nearly uniform, as in the mahogany and heech; whilst in another class the rings are very distinct, and their pores are filled with resinous matter, as in the fir and pine. In the vegetation of a tree, next the leaves, the bark is the most important part; the branches may be cut off, the leaves may be destroyed, and the tree may even be cut horizontally, and yet it will exist, but if the bark be taken off it cannot survive.

As forest trees, when growing, are termed "timber trees," in distinction to fruit trees, so, when they are cut down, they are called "timber." Timber includes all kinds of felled and seasoned woods, or those kinds of trees which, being cut down and seasoned, are required in the several parts of a building by the carpenter and joiner. With respect to the qualities of timber, they may be termed hardness, density, weight and strength. While the tree is growing, the exterior parts are probably weaker than the interior, but when it has attained full maturity, and approaches towards

decay, the circumstances may be reversed, the exterior parts becoming harder and stronger, while the interior are beginning to experience dissolution. The density of timber is in proportion to the time growing. The weight of wood depends upon what part of the tree it has been taken from. When a strong piece of wood is required, the lower part of the tree should be chosen. The heaviest woods are generally the strongest, but this is more particularly the case with regard to those parts that grow nearest the centre of the trunk, and nearest the root, provided they are so far removed from the latter as not to be very cross grained. The strength of different parts of the same timber, and of different woods of the same kind, is very different. The wood immediately surrounding the heart is weak, the heart is weaker than the exterior parts, and the wood next the bark is weaker than the rest: the greatest strength is generally to be found between the centre and the sap, and timber that is straight in the grain is the strongest; knots tend to weaken it.

Timber may, I think, be called the raw material, and deals the manufactured article. There are different sorts of timber, which are known by different technical names; for instance, "large" timber means timber about 18 inches square; fir timber is called "free stuff," as it may be worked freely with the plane without tearing; "balk," "bulk," "log," or "whole" timber, consists of the largest square pieces that can be cut from the trunks of trees, being from 9 to 16 inches square, but generally 13 inches square, and sometimes extending 60 feet or more in length. "Balks," or "logs," are by the workmen denominated timber, in contradistinction to the wood that is used in the shape of deals. "Half timber" is 6½ inches square; "brack timber" is the cheaper sort, which has the defect of being very full of large knots, rendering it unfit to be cut into small scantling. A "stick" of timber is any piece of timber of moderate size and scantling; and the waste in cutting timber is commonly called the offal, a great deal of which is exported from France and Holland.

The Baltic timber is generally cut "die square," (or, what the Americans called "maud edge,") end to end; but the Canadian timber generally is not cut die square, because they could only bring very short timber. The inferiority arises in the nature of the tree, which grows tapering. Die square means that the sap-wood is squared off, leaving timber to the heart of the tree.

It is very difficult, in fact almost impossible, to discover whether a piece of timber is sound or not, unless it be sawn into scantlings; you cannot perceive from the exterior its interior faults; you may, perhaps, see certain splits or shakes, which might be thought to indicate unsoundness; but if the timber is used as a beam, and the splits are of slight extent, they are not of great importance, owing to the large scantling of the timber. Where these fissures exist, the timber is used for beams, rafters, or quartering, but not for thin boards.

Timber in the log, owing to its becoming rent by the weather, deteriorates in value by keeping, more and more every year. The sap, or external wood, acts as a sort of hoop to the heart of the log, which, for some space of time, binds and keeps it tight, and hinders it from splitting until the time at which it can be sawn; and from the moment the saw has divided it into thinner pieces, the tendency to split is over. It frequently happens that a piece of timber that looks perfectly solid on the outside is found deficient at the heart when sawn. Timber columns and posts, to prevent their splitting, should be bored down the middle; and girders should be trussed directly after they are sawn, as the shrinkage and drying tightens the trusses. If square timber lies in the water two or three years, it rents at the heart. It would not, perhaps, the first year, but the exterior part would soon rend by exposure to the weather. Timber does not benefit by keeping, on the contrary, it sells for 15 per cent. less the second year than the first; and so for less and less the longer it is kept, unless thoroughly seasoned.

All those who convert timber into deals, &c., will know that a great quantity of the converted article is useless, or greatly faulty, on account of the inward decay of the wood from rotten knots, or the cross running of the shake. The more free timber is from knots, the more liable it is to be shaken at the core. Knotty timber is less liable to these defects at the heart, because it is said, that the knots serve for bolts throughout the timber, to keep all the parts together. The wood which is just under the sap is more free of knots than that which is nearest the centre. It is impossible to find out the quantity of knots in the centre of the wood till it is opened, but we know very well that on the surface there is the freedom from knot, in consequence of the tree not having shot out the knot or branch to the surface. The knot is the remnant of a branch. When the dead branches fall off, or are broken off, the wood grows over the extremity of the broken branch, and remains clear of knot. When you recede to a certain distance from the centre of the tree, you find the wood most clear

from knot, either in size, or altogether. American fir is of a soft nature, and very free from knots. That which is free from large, loose, or dead knots is the best.

Timber, in order to be of use to the joiner, is cut into different thicknesses, and is known by the name of fir or deal; the American fir is known by the name of pine timber, and, as deals are the form in which it is most conveniently imported (both from America and the Baltic), the word fir or deal has become the common name for all sorts of pine timber. The conversion of timber into deals takes place abroad; it would not come in a fit state for sawing. It is there, cut into proper thicknesses by machinery, and is afterwards cut down in this country into boards of various thicknesses, to suit the purposes required. If the timber were imported, say from the Baltic, in logs, and manufactured into deals here, it would deteriorate the quality of the deals. A deal sawn on the spot is certainly better than one sawn here, because there is a considerable outside shakiness, which takes place from the log being exposed to the air. They are in the habit of picking out the best timber, to be converted into deals. That which is to be sawn, is purchased abroad in the round state; if square timber is used for that purpose, it will be split and injured in being floated down the rivers, and consequently would be unfit for cutting into deals. If the deal is not cut from the round log, and also as quickly as it can be from the time of felling, the grain will open, and the wood will be shaky, and when cut into thinner boards, it will be fit for nothing. If the round logs were brought soon after felling, and sawn quickly after arrival, this evil might not occur; but the freight would be nearly doubled, if not quite, and we should be paying this large freight upon sap, wastage, and defective parts; that is, upon the parts which prove to be defective after the log is divided, and which, when the wood is converted abroad, are not shipped, but kept back.

As the lengths of apartments are different, so great variety of lengths are required to work in advantageously. European deals, which are imported from 10 to 22 feet in length, and from 8 to 10 inches in breadth, and American deals are from 10 to 13 feet in length, and from 9 to 11 inches in breadth. Deals coming from St. John's, New Brunswick, are from 22 to 24 feet in length. Besides the deals exported to England and France, there is a third kind, too bad to be used for building purposes; these deals are cut up into firewood, which is exported in considerable quantities to the London market; the firewood is cut from the bad deals, which arise from the timber being rendered useless from rotten knots, or splitting at the heart. These deals are likewise exported in another form, viz: deal ends, which average 6 feet in length, though sometimes much shorter, and are about 5½ inches wide, by 2½ inches badly squared. They manage to get these deal ends out of the bad deals by cutting off the defective knots, and other excrescences.

As there are different sorts of timber, so there are different sorts of deals, which are known by various names. "Rack" deals are often of the same quality as the main timber, but by being cut sappy and slabby, they are not greatly imported. "Slab" deals are deals cut from the outside of any piece of timber, and are frequently of very unequal thickness. "Hand-sawn" deals are those deals which are sawn in England by builders, as they are required for use, and are termed hand-sawn in contradistinction to those sawn by machinery. "Spruce" deals are thin deals, cut from the white fir tree of Norway; they are devoid of turpentine, and are sometimes used by builders. "Deck" deals are used by ship builders for the decks of ships, and are of very great length. Deals are divided into two classes, which are known by their respective colours, viz., yellow and white deals. Yellow deals are generally of a bright yellow colour, and have not lost their resin. In selecting them, the brightest should be chosen, and where the strong red grain apparently rises to the surface. The yellow deals are the strongest, and therefore the most suitable for external work; they are likewise the dearest. Fir that is deprived of its resin is termed white deal; it is very clean, and is much used for internal work, but it will not stand the weather. Deals, and likewise timber, are generally named from the ports at which they are shipped, as Riga, Memel, or Dantzic timber, Christiana and Dram white deals, Stockholm and Gefle yellow deals, &c.

Although I have generalized all kinds of timber, cut into different thicknesses, by considering them under the head "deal," still deal, more strictly speaking, applies only to timber of a certain width. Deals are usually cut of three different widths, each of which has its appropriate name. Those from 11 to 12 inches wide are called plank; those from 8½ to 10 are called deal; they consist, as has been said, of various lengths, and are most commonly 3 inches thick, and seldom exceeding 9 inches wide. All below these dimensions, and from 2 to 7 inches wide, are generally from ½ inch to 2 inches thick, are termed battens. They are very often cut from deals, and are 4½ inches wide,

* Paper read at the Architectural Association, by T. A. Britton, M.R.I.B.A.

one deal making two battens. Battens are frequently used in choice floors, because they contain less sapwood than half deals. Those employed in laying floors may be classed as follows:—first, or the best, which are selected with the greatest care, and are wholly free from knots, shakes, sapwood, or cross-grained stuff, and well seasoned; the second is free from shakes and sapwood, and large knots, but small sound ones are allowed; and the third comprises all that remains after the former have been picked out among the whole lot. The word “plank” is sometimes used in a wider sense than that given above; it is made a kind of general name for all timber excepting fir, which is from 1½ inch to 4 inches in thickness. The word “board” is the name given to flat pieces of timber generally, but applying more particularly to pieces of stuff exceeding 4½ inches in breadth, and under 2½ inches in thickness. “Feather edge” boards are those boards which are much thicker on one edge than the other. “Stuff” is a general name applied to all woods in joinery. Deals are cut into various thicknesses, called boards, or leaves; so that a deal will always have one cut less than there are boards. If a 3-inch deal is cut into a 2½ inch and ½ inch board, two boards will be obtained by one cut of the saw. There are different modes of cutting down deal; they are named according to the number of their subdivisions, as “three-cut stuff,” “five-cut stuff,” &c. A whole deal is not three inches thick, as one would suppose, but only 1½ inch. It seems rather absurd that such should be the case, but perhaps it may be accounted for as follows:—deals, especially American, are exported in great numbers of the thickness of 2½ inches; when they arrive they are sawn into two 1½ inch deals, which is the thickness generally required for floor boards, and as an enormous number of 1½ inch boards are thus used in buildings, it is probable that by lapse of time 1½ inch deals have been by workmen taken to mean whole deals. “Slit” deals are generally ¾ inch thick, being obtained by sawing down a 1½ inch deal. All thinner boards are termed “veneers.” “Tongue” stuff is thin stuff used by joiners for tonguing. What is termed by carpenters an “off-cut,” is obtained by converting a 3 inch deal into 1½ inch flooring boards; by that means you obtain a board half an inch thick, which is rather difficult to make use of.

Having, I believe, named all the varieties of deals, I shall now briefly consider their defects.

As a general observation, it may be stated that woods do not alter in any material degree in respect to length. They, however, contract in width, warp and twist, and when fitted as panels into loose grooves, they shrink away from the edge which is most slightly held; but when held by nails or other attachments which do not allow them the power of contraction, they will split with extraordinary force. It is said by some authors that the softest woods shrink most in width, but it is very difficult to obtain any correct information on this subject. In woods that have been partially dried, some of these defects are lessened where they are defended by paint and varnish, but they do not then cease; and with dry wood, every time a new surface is exposed to the air, even should the work have been made for many years, these perplexing alterations will in a degree recommence, even independently of the changes of the atmosphere, the fluctuation of which the woods are at all times too freely disposed to obey. The atmosphere has an effect on most woods; and some deals, particularly the stringy deals, are very liable to be effected by the moisture of the atmosphere, and never lose the property, however long they have been seasoned, of expanding and contracting with change of weather. When a log of green wood is exposed to a dry atmosphere, the outer fibres contract both at the sides and ends, whereas those within are in a measure shielded from its immediate effects, and retain nearly their original dimensions. Those deals cut near the centre of the tree are very liable to split, yet they are not so bad as those cut near the outside. All deals are slightly split up at the ends, and in 12 feet deals you can rarely calculate upon more than 11 feet 8 inches in actual wood, for they will split up at each end. Splitting is an important thing to be considered in all woods which are cut down into boards; although small splits are not of so much importance in beams and sticks of timber, yet when cut down into thin boards perhaps half an inch thick, splits and other defects would be total destruction. Sap should be carefully excluded in all deals. We often meet with deals which are very good at one end and defective at the other. The French are not so particular about sap as the English. If the deal has the required quantity of good wood on one side, they do not care much about the other side. Their deals are not so good as ours in that respect. The common calculation is, with regard to sap, that in a plank 12 inches wide there shall be 9 inches free of sap on both sides. The deals cut next to the sap are the best, between the centre and the sap. The centre deals are clearer of sap than the outside deals. White deals are similar to yellow, except that the sap in white deals is not

discernible from the heart. In yellow deals the sap or alburnum of the tree ought to show itself only at the edge of that part of the deal which was furthest from the centre of the tree. After the sapwood has been removed from the edges of the board (or after the edges have been what is technically termed “shot,” that is, planed, though they may be shot without removing the sap), they are called “listed” boards. When the sides are planed they are described as “wrought.” Deals are apt to rend from unequal or too rapid drying, which produces certain fissures or cracks called “shakes,” and deals thus effected are termed “shaky.” Outside deals are very subject to shakes. A knot is frequently very injurious to deals. The bark of a tree sometimes adheres to knots, which consequently have a black ring round them; when the deal comes to be cut into boards, a knot of this kind is apt to fall out. “Cast,” or “warped,” is an effect produced upon a piece of timber by heat, moisture, or otherwise, the fibres becoming bent or twisted from their original direction. To prevent warping as much as possible they are listed.

Such being the defects of deals, it behoves us to consider what are their merits, or what they ought to be. The first thing to be considered is the quality of the wood. Many deals are of good quality, and are therefore fit for rough out-of-door purposes, and coarse floors or carpentry, but are wholly unfitted for joiner's work, for when the saw has passed through them they warp, and will twist like a piece of whalebone. Such deals are termed “strong” deals, and possess the bad property of rending themselves to pieces as they dry, and become shaky. Deals that when sawn do not form sawdust, but are torn into long strings or fibres, and on that account are called “stringy” deals, are in general of this strong nature. Such deals are less uniform in their texture, and vary more in the hardness of their fibres than those deals which are fit for the joiner. The deal, to be good, should be mellow, that is, soft and light, should yield easily to the knife or chisel, should be straight in the grain, without coarse knots which weaken the deal, and the more nearly it is perfectly clean the better. Such deals are characterized by their light weight, in comparison with the strong fibrous deals; and when planed they exhibit a silky texture. If the deal is cross-grained, it generally becomes shaken diagonally under drying, and falls to pieces under the saw; or if cross-grained in a less degree, it does not yield a smooth surface to the plane, but remains rough and fuzzy. Although from description it may seem extremely easy to tell the difference between a good and a bad deal, yet it requires some time before one can do so correctly, as they are sometimes very deceiving.

(To be continued.)

ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY OF LIVERPOOL.

THE fortnightly meeting of this society was held last evening, at the Royal Institution, Colquitt-street, Mr. Joseph Boulton, president, in the chair. Before the ordinary proceedings commenced, the President said he might perhaps be allowed to make a few remarks relative to a recommendation which at the last meeting he made to the student members, that they should attend the lecture on church architecture by Mr. Street, at the Liverpool Institute. He attended the lecture, and was exceedingly disappointed. He had hoped, from Mr. Street's eminence and attainments, that that lecture would be exceedingly interesting to architects. He had thought that Mr. Street would treat the matter from an architect's point of view; but instead of that Mr. Street favoured his audience with a lecture on symbolism. Of course, symbolism would have a great deal of sympathy from many of them upon æsthetic and devotional grounds; but it seemed to him that Mr. Street pushed the subject to a great length, and he was aware from the experience of friends about him that it was a subject which, if pursued to any great length, had a most prejudicial effect upon the mind, weakening and enervating it, and, therefore, he should be extremely sorry if any of the younger members of the society thought that in recommending them to attend Mr. Street's lecture he in any way wished them to imbibe such extreme views on the subject as Mr. Street expressed. To show how very easy it was to detect symbolism in anything, he might say that the symbolism which Mr. Street derived from the nave and aisles of a church might readily be derived from the ancient Greek and other temples, in which the same features appeared. In a Greek temple, due allowance being made for simplicity of style and plan, he would undertake to find as much Christian symbolism as in a cathedral. They might find a great deal of symbolism in St. George's Hall, and they would find a great deal of symbolism in the five-light Hastings lamps. The five lights were typical of the five wise virgins. The lamp was divided into three parts, and the platform on which it stood was guarded from accident by four posts—3 and 4 being both symbolical numbers. The shape of the platform on one side resembled

the cutwater or bow of a vessel, and, therefore, from the shape and use to which it was applied, it might be taken as symbolical of the ark of refuge, just as Mr. Street said the nave of a church was symbolical of an ark of refuge. Those who had studied the history of art must be well aware that these various forms were not designed to be symbolical, but that after they were designed they were applied to symbolical purposes. Mr. Street stated that the octagon shape of the font was symbolical of regeneration. Now, the octagon was one of the oldest figures in existence, and was designed without any reference to Christianity. He had no doubt it was designed on artistic grounds, and was afterwards used symbolically to represent regeneration by those who favoured symbolical views. Mr. Street omitted to state what symbol was attached to a square or circular font. He (the President) wished to exonerate himself from the blame of having intentionally induced the younger members of the society to listen to a lecture containing what appeared to him such extravagant views on the subject of symbolism. The President next proceeded to call attention to the designs for a mantelshelf sent in by the student members, stating that the council had given the preference, both for design and drawing, to the one marked with a plain circle.

The paper for the evening was by Mr. Samuel Huggins, and was entitled “Letters from the New Capital of Australia, by Scammozzi Smith, architect; written to his friends in London during the summer and autumn of 1916.” The letters were chiefly descriptive of the architectural features of an imaginary future capital of Australia—a great empire, supposed to be developed out of our colonies in that country, and in a flourishing condition some fifty years hence. The constitution is represented as that species of limited monarchy which is most correctly characterized as an idealisation of our own—our own British constitution corrected and purified to the utmost. The aristocracy is an aristocracy of intellect, not of birth, elevation to the peerage being the reward exclusively of eminent service to society—not in law, war, or politics only, but in any branch of art, of science, or of literature. A full description is given of the magnificent city, the architectural beauties of which have attracted to it a party of English architects and their friends, of which the supposed writer of the letter is one. They approach it by water or by land, on the central or municipal quarter, which is an island, and there learn that, by the river which flows round it, and a canal, both of which are spanned by numerous bridges, the whole city is formed into five departments, all separated from each other by water. They are appropriated as follows: The centre is the department of the local government of the city; the north quarter is devoted to commerce; the east is the trade quarter; the south is the aristocratic or palatial quarter; the west is the literary or collegiate quarter. Besides these, which properly belong to the city, there is the isolated quarter without the walls on the south side, appropriated as the seat of government and legislature, containing the houses of parliament and all government offices. A magnificent road conducts to it. Two of the quarters, viz., the commercial quarter and that devoted to trade, are represented as having become, as regards their business operations, and consequently their architectural arrangements, very much mixed up, but with no ill result, and likely in time to become completely blended. A peculiarity of the trade quarter is that the trading streets, all of which are placed in its centre, are formed on the Chester-row principle—an arrangement greatly contributing to artistic beauty, by securing deep shadow to the front, so much wanting in the shop fronts of old England. In the aristocratic quarter no shop, workshop, office, or place of business of any kind is allowed to show itself; and no house is to be built below a certain size and value per annum, regulations submitted to cheerfully by all classes, under the conviction that it is essential to the making of Shakspeare what all desire it should be, a uniformly beautiful city. Some of the finest buildings in the collegiate quarter are the palaces of the poets, artists, philosophers, and literati; where men who have achieved a certain rank in any liberal pursuit are honourably lodged, receiving apartments for themselves and families, with a certain stipend annexed to them; for which they are not expected to do anything in return, “that,” to use the word of W. S. Lander, “they may not incline, nor be obligated to any vile or lowly occupation;” that the lamp of literature and genius may ever be kept alive, and that there may be ever in the land a succession of those heirs of fame. The general principle of street arrangement in the different departments of the city is given, which is this:—From a grand central and circular place or open area, the main streets, equal in number, of great width, and making equal angles with each other, radiate to the extremities of the district, terminating either in the river or at the wall, through which they pass by a gateway to the suburbs. These radiating streets are crossed by a series of fine concentric ones, which, however, are

not repeated to the extremities, but give place to subordinate systems of radiation from centres on a smaller scale, the radiating lines of which variously terminate in those of the larger, in the last of the great concentric streets, or at the river or wall. The great radiating lines are noble avenues which bring the beautiful breeze into and thoroughly ventilate the city. But nowhere is the country—that is to say, nature—crowded out. It pervades the city to its very centre; which it is the better enabled to do by the absence of everything that could contaminate the air. Round all public buildings and at the intersection of most of the great streets ample areas are provided whose grass and shrubs refresh the eye. The public park or gardens is described, and also the public cemetery, which are both represented as truly artistic features of the neighbourhood. They are profusely decorated with high-class sculpture; on mention of which the writer takes occasion to remark that nothing had given him a higher idea of the pure taste and intellectuality of the people than their fondness for and extensive employment of the art of sculpture, which he conceived to be more abstract, spiritual, and ideal than her sister art of painting. Though in solid material, it was so unlike the body, the mere form of which it imitated—so calm, so pure—that it would stand for a portrait of the soul rather than of the body. As such a high-class statue seemed to him to be the divinest work of man's hand; in saying which he was not placing sculpture above poetry, which was a direct communication of soul with soul without the intervention of manual labour or skill. The writer attributes the extraordinary success of the people in art to the prevalence among them generally of a clearer idea of the proper end and aim of human life. It was perceived that wealth and happiness are not identical; that money is but a very subordinate means of attaining to that *summum bonum* of life. Wealth was sought with diligence, but it was generally sought and used as a means of obtaining something higher—something more nearly allied to and more immediately conducing to happiness—as health, leisure for self-culture, acquisition of knowledge, and cultivation of the intellectual and moral faculties; the power of diffusing education, of advancing the arts and sciences, drying the tears of sorrow and distress, and promoting the higher and lasting interests of humanity. They pursue knowledge for its own sake, and its ennobling influences; and the ardent love of it that is engendered has naturally led to the more general and uniform cultivation of the intellect—that is, of the entire intellect—among all classes, by which all the mental faculties are more or less brought into play, and by which are constantly produced that rare balance of imagination and the reasoning powers in which the perfection of the human intellect will be found to consist. Capital punishment is represented as having been about ten years ago abolished in this happy country, in which, moreover, existed a growing sense of the awful wickedness of war—that is, of aggressive or avoidable war—which, taking its rise among the gentler sex, and fostered and encouraged by the clergy of all denominations had at length become almost universal among both sexes and all ranks and orders of society.

A brief discussion followed the reading of the paper, and Mr. Huggins was heartily thanked for communicating the correspondence to the society.

CORRESPONDENCE.

THE CLEANSING OF THE RIVER LIFFEY.

TO THE EDITOR OF THE DUBLIN BUILDER.

SIR,—I trust you will not deem it too great an intrusion upon the columns of your valuable journal to insert the following remarks, which I beg to make for the general good and mutual advantage of my fellow-citizens and myself; and whilst I do so, I must assure both you and them that I am not prompted by any desire for notoriety, but merely with the view of having the great evil to which I advert, properly and permanently abated at the least possible expense, and with the greatest economy of taxation, with which we are so heavily burdened. It is now about ten years ago since I suggested this plan I am about to lay before the public; I sent it to some of the daily papers on that occasion, but it appeared in rather a mutilated state. However, I thought it prudent to ask the opinion of one of the greatest and, I will add, the most scientific men then in the Corporation to leave it before that assembly, which I thought should be composed of men of enlightenment, independence, and influence; but, unfortunately, it happened to be the very day previous to that gentleman resigning his seat in the Corporation. He, however, answered me in a most courteous manner, stating that of all the projects that came under his observation, he considered it the best, and that if it was not an entire cure, it would be the greatest palliative he ever heard of, and advised me in his letter to have it forwarded to the then Lord Mayor, with his recommendation. The

gentleman was no less than Alderman Benjamin Lee Guinness. He said from its trifling expense, when compared with other plans, it was well worthy of a fair trial. I had it forwarded in a parcel addressed to the Lord Mayor—I believe Alderman Hoyte—I also enclosed Alderman Guinness's letter. It never appeared after to be discussed in the Corporation. I called, and the secretary informed me that a pressure of business prevented its being attended to. I called again, and asked for the document and Mr. Guinness's letter, but I was informed it was mislaid, so I never heard a word about it since. However, it only came from a *burgess*, and not worth notice. The plan is simply this:—Let the bed of the river be cleansed on either side, left free of rocks and other obstructions, and brought on an incline plane from each side with a fall towards the centre, say of about two inches to the yard, which is partly the case at present, then lower all the nostrils of the foul tributaries which discharge the filth into the Liffey from their present position and size down to the base of the wall on each side, and instead of having them three or four feet square, as the most of them are, have them, say about eighteen inches deep and six feet wide, say nine superficial feet equal to a three feet square, and so on as required. At present there are most of them eight and ten feet high, so that when the bed of the river is covered with water at quarter or half tides, these poisonous sewers are puffing their noxious gases up through the apertures like so many chimney stacks, and when the inhabitants on the quay side are quite free from any smell, the bed of the river being covered with water at quarter tide, the greater majority of the citizens are inhaling and condensing in their brains night and day the filthy effluvia as long as the nostrils are open in the walls of the Liffey as all such foul vapours ascend. Now, the important part. The lowering of all the sewers being completed, then get a rampart or waterfall constructed on the west side or either side of Carlisle-bridge sufficiently high so as to keep back water up to Barrack-bridge to completely cover all the mouths of the sewers, and, of course, the bed of the river. This completely cures the disease, both at the river side and through the whole city, as all the sewers in hydraulics are what is technically called water trapped, and no smell is to be got in the Liffey, and none can escape up through all the monster chimneys. Now comes the cleanser. The rampart at Carlisle-bridge might be built of stone or wood, as the case may be, in the form of a quadrant, the convex towards the stream or the west, and about eight feet high or less, I imagine, will throw a sufficient height of water to cover all the sewers of eighteen inches high up the river, as there is but a very trifling fall in the bed of the river, so that at full tide or three quarter tide any small boats requiring to come up the river can sail over the rampart. In the centre of this rampart there should be a large flood-gate or gates sufficiently wide to flush the river every day if necessary, or twice or three times a week, as the case may be. Then at Barrack-bridge to have flood-gates erected to keep back water when required to flush out the river, so that when these upper gates would be shut off at full tide, and all the contents of the Liffey, say three quarters of a mile, from Barrack-bridge up to Island-bridge, discharged down the city part of the river, the lower gate open, it would not only cleanse the bed of the river but would drive all nuisance away to the bay, and say when the tide would be nearly out, so as not to wreck the walls or bridges. This, I submit, will be a complete cure, and drive all the filth of the city into the deep sea, any small dregs that might remain below the rampart the steam dredges as usual could easily remedy. This plan will not interfere with the fishery, as at full tide I expect there would be six or eight feet of water over the rampart quadrant, and the upper gates should be always open except when going to flush the river. There is no mill site on the river above the upper gates that the tail race could be infringed on. Hoping that the public will give the plan a fair and impartial reception if adopted, I pledge my existence this would be the sweetest and healthiest city in Europe. The plan latterly spoken of would destroy all the beautiful villas on the North side with the filth landed at the road side, and also on the South by getting their share along Sandymount, Booterstown, the Rock, and Kingstown. Another plan was lately mooted in the public press to draw the filth up the quays by some Archimedean screw principle and land it about Island-bridge. This would beat all the other plans hollow, as we have a westerly wind on an average nine months in the year, and brewing being our principal trade left in Dublin, the stench of it would blow in on every cooler and destroy the worts before it would be fermented. That would finish the porter trade. Then away with such childish theoretical plans, such lineal screws, or throwing charcoal peat dust into the Liffey and sweeping the walls with brooms at low water, hurl all the excrements at once out to sea every day, or as often as necessary, with some hundred thousand tons of water above your flood-gates, then let political capitalists, utilizing ad-

venturers, and gold-finders drudge for it in the deep sea, and take it in fish, or flesh, or any shape it turns up, and carry it to Edinburgh, where such value is set on all matters of this sort. It may be thought by many that it is presumptuous for a mere *burgess* to advance an opinion on a subject of such apparent magnitude. My answer to that is, that those who value their health, and particularly those who are heavily taxed, have a right to protect themselves and their families against such a foul evil. The wealthy merchants, traders, and shopkeepers of the city of Dublin and its vicinity should call a public meeting and let it be attended by the scientific men of all grades, and adopt this, or any other plan which can be proved better, and insist on these men whom they elected to protect their interests and guard the public health, to scout from their minds the monstrous idea of delivering the filth round the suburbs of the city. Trusting that the awful scourge of fever which is now so prevalent will not augment before some remedy is adopted, or that fearful scourge, cholera, working death amongst us, should visit our shores, then we would be running in confusion to remove their principal cause, though there would be other sad duties to engage our minds, to attend the sick, to watch and console the dying, and bury the dead, perhaps, our nearest relation. I have nothing to gain by it in a pecuniary way, but will feel happy when I know there can be a pure atmosphere breathed all over the city of Dublin, and when I can see the salmon leap over a beautiful ornamented cascade composed of the sweet silvery waters of the River Liffey at Carlisle-bridge. I am now some forty years engaged principally in hydraulics in breweries, chemical works, and distilleries of every description, turpentine, oil, &c., so it is not theoretically I presume to bring this before the public, it is from long practice amongst foul pipes, traps, gullies, &c.; though if this plan be adopted there is not a single shilling's worth connected with my trades would be expended on it, but it would employ a large number of stonemasons, carpenters, and bricklayers, instead of having lineal sewers composed of iron or metal tubing from Scotland, which would rot with the excrements and urinal matter passing through, and be obliged to be replaced say every ten years, a never-ending expense on the citizens of Dublin.

JOHN MURPHY.

Thomas street, Dublin.

THE PURIFICATION OF THE LIFFEY.

TO THE EDITOR OF THE DUBLIN BUILDER.

DEAR SIR,—I see by advertisement that a reward of one hundred pounds is offered by the Corporation of Dublin for the best plan for preventing the unwholesome emanations and offensive smell of the river Liffey.

Of these and the complaints concerning them, I may say I have had the experience of many years, and the plan which has always suggested itself to my mind as an effectual remedy is as follows:—

I would build two walls, one on each side of the Liffey, continuous from Bloody Bridge to Carlisle Bridge, these walls to be from 6 feet to 8 feet from the present quay walls, and in height a little over high water mark. I would then cross the river at Bloody Bridge between these walls with flood gates opening towards King's Bridge, which would permit the tide to flow up to Island Bridge as usual, but would intercept the return flow of water in the centre of river, diverting into the side passages between the new walls and the present river walls. This would ensure a rapid current over the mouths of the drains during the whole time of ebb tide, purifying and carrying their contents into the deep water at Carlisle Bridge, and thus prevent any of the drainage of the city from passing into the bed of the Liffey, while permitting the ebb and flow of the tide into it as usual.

I propose the above plans as being practical, effectual, and economical.—Yours, &c,

7, Upper Liffey-street,

Dublin, Feb. 24th, 1866.

PATRICK M'GRADE.

The estimate for "Public Buildings," Ireland, for the year 1866–7, is £90,663, against £103,677 voted last year. Amongst the estimates is one for a new central police court, the cost of which is fixed at £8,550. A new estimate appears, amounting to £10,000, for the erection of buildings for the Queen's University in Ireland. A small sum of £500 is proposed for additional plantations in the Phoenix Park. The vote for the encouragement of the growth of flax is reduced from £5,000 last year to £3,000 for the current year. The grant for the National Education buildings is £14,709. We anxiously hope that the estimates for next year will embrace a grant for the purpose of building a new bridge in place of the present dangerous and inconvenient one between our great thoroughfares, Sackville-street and Westmoreland street.

GOTHIC MOLDINGS.*

No. I.—EARLY ENGLISH MOLDING.—INTRODUCTORY.

I SCARCELY know how to apologise, not less for the manner in which I present my subject to-night than for the matter of my discourse. If the few slovenly scrawls—scarcely worthy of the name of diagrams—which the exigencies of other occupations have permitted me to make, are sufficient to convey to your minds the faintest illustration of what I would desire to express, I will esteem myself very fortunate indeed, and I would pray the forbearance of your criticism on the shortcomings of drawing and perspective which these hasty hand sketches exhibit. I have said that some apology is due for the matter of my discourse, and for this reason that although ostensibly I improve the occasion for a covey of architectural fledglings, I am well aware that I address myself to some very fully feathered and knowing old birds, who know quite as much about my subject, or more, than I do myself, and whom for me to presume to lecture on the *Rudiments of Gothic Moldings*, may seem a piece of downright audacity. I beg of you, before you inwardly accuse me of this, to hear my reasons for taking a look into the A B C of a subject with which all of us ought to be thoroughly acquainted.

I make bold to say that in these days when what is known as “eclecticism” in architecture is happily or unhappily on the wane, and what I would call “every-man-walking-according-to-his-lights-ism” is on the increase, a great many of us are falling into the very grave error of not paying half enough attention to those first principles of the disposition of Gothic moldings in which lay one of the chief elements of the perfection and glory of what was best in mediæval architecture. Some of you may look with scorn on the “eclectics” as a school of stupid unimaginative fellows who had not the sense to see that if antiquity was to be swallowed at all it was to be taken “*cum grano salis*,” and who were only fit to copy old examples literally—faults and all—for better for worse; but I ask you, were not these men of the early days of the Gothic revival at least industrious, painstaking fellows; granted also that they rode little hobbies to death, such as the orientalism of the pointed arch, and the *origin* of this fillet and the other bead and so forth, but they went laboriously from country church to country church with tape and rule, which you—and I—do not, and collected vast numbers of examples of one thing or another, which they have left for our edification, and which—judging from our fruits—I think we do not study as we ought. I don’t mean to say our friends the eclectics—the most faithful of them—did not commit sins of their own as bad as ours. Many a perpetration they gave us and give us still, which perhaps may be very exact Venetio-Gothic or correct English Perpendicular, but which is very bad architecture indeed, and for this reason, that it violates the true principles of all good architecture. I give you two—fancy sketches shall I call them? which will each illustrate a similar error, I think, in the two schools. I had intended at first to borrow a leaf from my sketch book and give you bona fide representations of sinning examples in recent works, now I prefer to alter details, perhaps to caricature a little, and, while I endeavour to preserve the spirit of error in the originals which suggested these observations, to present you with somewhat imaginary illustrations. You might have recognized the originals in spite of my villainous drawing of them, and I would rather you did not, as I would be very sorry indeed if I should chance to give pain by making my remarks in any way personal.

Which of you will venture to deny that of all the glorious features great and small of mediæval architecture, of all the touches of the mediæval architect’s hand so subtle in their power, so lovely in their success, there is any more subtle or lovely than the way in which he blended his column or pier by the gently spreading capital into the wider archivolt above? A grand stroke of art this of which later classic art with all its refinement failed to discover the secret. Recall to your minds—you who have the good fortune to have such memories in store—we will say for example the central column of some of our English cathedral chapter-houses or some such exquisitely graceful clustered piers as those of the Temple Church, gathering so deftly, and withal with such a sense of sufficiency, on their spreading capitals the cluster of vigorous arch-moldings—say if in a corresponding matter of detail Classic art ever achieved anything like this, and, what is more to the purpose, if we with all our knowledge of the triumphs of architects of every country and age, take care to do as well as these?

ERRING ARCH MOLDINGS.

I was passing not long since an important building by a well-known architect. Who *he* may be, or where *it* was, or what *it* was, is not to our purpose; my imaginary sketch No. 1 gives in other outward guise its erring spirit. The designer of this, I would guess, endeavoured to make his design pretty in a geometrical elevation;

he wished to make his arch moldings wide spread and rich on it, and, as a bow-pen is a very facile instrument, he placed an arch of two orders (I will explain this term hereafter) over his pier. On his geometrical elevation this looks all well enough, but as you and I get it in actual stone, looking up from the street, the splaying, as I may call it, of the arch moldings brings their line within that of the angle of the pier below, very “uncomfortably,” as I once heard a juvenile architect express it. This may be perfectly “correct,” and for anything I know to the contrary there may be a thousand “precedents” for it in Venice and elsewhere; but I think you will agree with me it is bad architecture nevertheless; a reversing of the proper process of design, this sticking of a clumsy pier for the sake of a pier out in front of a group of arch mouldings.

Look now at No. 2, disguised from the original as before; example of a monial column and tracery in what, if you will allow me, I will call the “Poloni-sansage” and “curly-cabbage-leaved” style. I think this speaks for itself. Compare it with this (No. 4), I regret to say almost a caricature of what I would hold up to your highest veneration, a Gothic capital of a pure style and good age. Near it you have (No. 3) an analysis of it denuded of moldings and capital, showing how the circular pier is worked up into the springer of the arch, which is square on plan. Can anything be more simple or natural, and yet it is just this if we attempt to analyse it at all, which lends the tender grace to such compositions of capital and moldings as I would wish you to admire as I do. Is the classic arrangement in a similar case so satisfactory?

This may seem almost as long-winded a beginning to the actual business of this evening as the introduction to some of Sir Walter Scott’s novels, which is saying a good deal. My apology is that I would wish to excite your attention to the importance of the study of molding as it seems to me to demand for itself. Possibly I may overrate it, but to-night at least you are condemned to listen to me, and I have license to ride my hobby as I will. I will have opportunity of judging whether the subject has interest for you if you pursue it with me farther, for I could not possibly exhaust it to-night.

I could cover these walls with examples, careless, slovenly and ill-conditioned bits of detail, each with some sin or a dozen of its own, but I hope these two are sufficient by way of illustration. The true way to amend is to study the subject, and it has occurred to me that there is no more wholesome exercise to train the mind than that of looking into our own English Gothic architecture, where if molding was carried to the greatest excess, it achieved the greatest glory; and if we can master its intricacies and *rationale* I think we will be able “to speak with our enemies in the gate” on the molding of all other architectures in Christendom. I am not about to give you anything new or original. You will find more about it in many books and better told. You might not, however, care to take the trouble to read them, and as I said before, you *must* listen to me, and take your “Paley-and-water,” or “Willis-and-water,” or “Brandon’s-analysis-and-water” as it may be, at my hands, as the youthful snuffers of Dotheboys’ Hall took their maternal brimstone and treacle at the hands of Mrs. Squeers.

FIRST PRINCIPLES.

It may seem rather an insult to your common sense to observe that the first section which the earliest arches of hewn stone adopted was like this (No. 5); but let that pass, and give your attention more patiently to the next development of it (No. 6), the arch with a sub-arch, or the arch of two (or more) orders, as it has been conveniently designated. Out of this simple thing it may be said the whole system of Gothic molding has its rise. Molding gradually became more elaborate in its character as it left the times of the Saxou kings, and drew near to those of the Plantagenets, but it never abandoned this general canon of division into distinct orders. If you will take the trouble, you can resolve the most intricate composition of moldings you may find into its main subdivisions for yourselves. Imagine then, if you can, a molded arch in its original uncut blocks, and I beg of your attention to this invariable rule that *all the groups of moldings will be found to lie upon the planes of the original squared but unmolded blocks*. I must add that, under this definition of “squared but unmolded blocks” I ask you to include those which have had the angles chamfered off, as shewn by the dotted lines. On three planes, therefore, you will find all these groups to lie; on a horizontal plane, which may be called the *soffite plane*; on one at right angles to this, which may be called the *wall plane*; and on the *chamfer plane*, which last may or may not be at an angle of 45° with the former ones; very generally it is so, however. If you will only stick to this and keep it in your eye, you will be enabled to copy moldings with some approach to accuracy. Neglecting this and trying to copy No. 7, you would probably hit upon something as near the original as No. 8. I have seen at least one costly standard work of examples where this simple rule is utterly ignored by the author—a blind leader of the

* A Lecture delivered to the Class of Architectural Study at the Institute of Architects of Ireland, on the 25th ult. by Thomas Drew, Fellow.



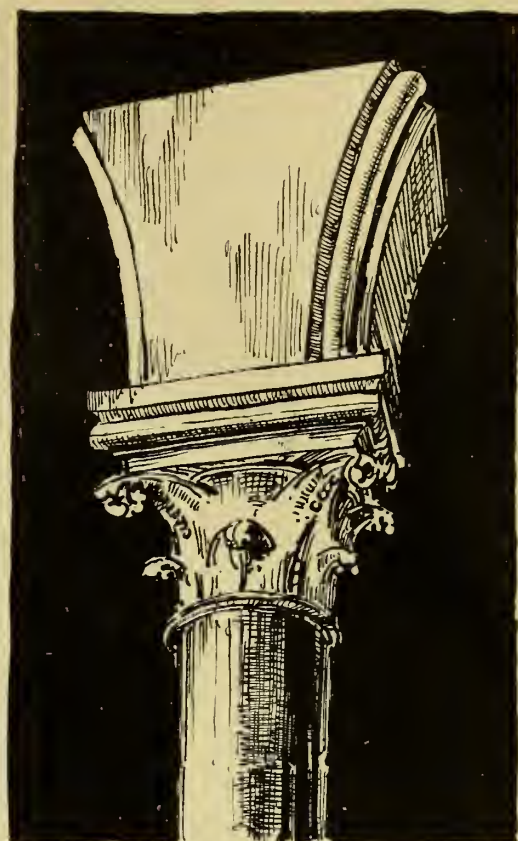
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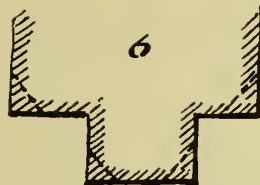
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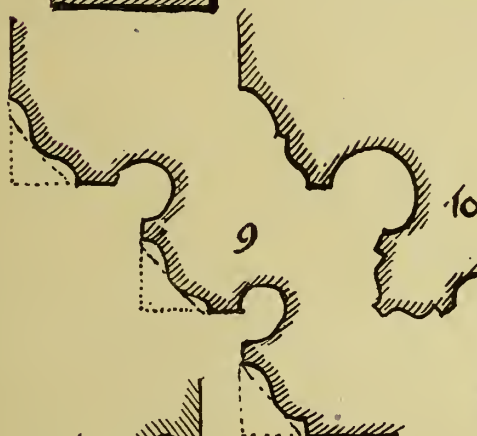
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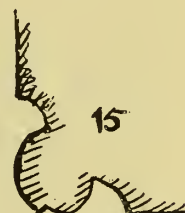
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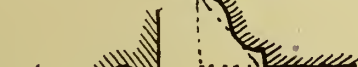
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Thomas New. Fellow R.I.A.
Jan. 25th 1866

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blind—and sheet after sheet of examples, plausible enough at first sight, are literally not worth the paper they are printed on, nor one half as much.

Presuming, therefore, that you are thoroughly imbued with the importance of this—I give you one more exercise which you can resolve for yourselves—No. 18, we shall proceed to consider English Gothic molding, as it appears distinctively in what we know as the Norman, Early English, Decorated, and Perpendicular periods.

NORMAN.

The Norman we may dismiss in a few words; until the transition period—of which you will find some most curious examples in the transepts of our own Christ Church Cathedral—it scarcely even displayed the germ of the future development. The minds of the early architects of this period appear to have been devoted chiefly to the production of shallow surface ornament as a means of enriching their arches and jambs. They did not get much farther than chamfering or rounding off the square angles. From the last the transition to a quirked bead is so natural that we are not surprised to find it at an early period.

PRACTICAL ORIGIN.

I would like you to keep in view in investigating the moldings of the Early English period as we go on, how naturally these moldings which appear so intricate are the result of practical stone working, and the internal evidence they bear that they were invented as we say “on the bank” by the stone mason, chisel and mallet in hand, and not by a young gentleman with a T square and a pair of silver compasses in a drawing office. Some of you will be familiar with a stone mason’s many “dodges” for working out his planes and moldings truly. Some of these moldings under consideration seem only his stopping short in a half completed task, as if it struck the worker that there as it stood would not look amiss. We will suppose he is working a quirked bead, No. 11; and the uncompleted task suggests one of the most effective of Early English moldings which Paley in his admirable work has named the *pointed bowtell*, No. 12. Bowtell, I should explain, is the mediæval term for what we would call a bead, or edge-roll as it has been sometimes named. Next to this in importance in Early English work comes the edge molding, which we may call the *filleted bead*; here it is, No. 13. You will observe that it is, after all, a trifling variation from No. 11; a fillet added on the outer angle or rather *left on*, for here is another proof of the practical origin of these moldings. The stonecutter, let us suppose, has removed the arris and formed a draught to guide him in working his roll; how simply it suggests itself to make it a little more

prominent and leave it there, but how important an influence it has on the bead, by accentuating the angle, you can judge for yourselves by studying, if I recollect rightly, some of those lovely choir piers and arches in St. Patrick’s Cathedral, which alone have escaped the tender mercies of the restorer. You will find this to occur with considerable difference of effect in two forms, with the fillet in the angular and strongly marked form, and also merging into the bead in an ogee form (No. 14), in which its effect is very different. This molding is worth noting, for it will be found to run, in form more or less modified, through the later styles. In addition to these what has been called the scroll molding, from its fanciful resemblance to a partially unrolled scroll, No. 15, sometimes, but not frequently occurs. These with the addition of some angular forms in endless variety of use and which defy classification, will be found to constitute the basis of all Early English molding, however modified and however intricate.

In English work, as contradistinguished from contemporary French, a desire is early displayed to spread the molded surface farther from the angle, and to the ingenuity developed in effecting this we owe some of the endless variety of more complex moldings; here are a few of them (Nos. 16, 17, 18, 19, 20). The last will afford a fair specimen of the extreme to which Early English architects carried the molding, not only of the arris, but of the wall planes and soffite planes of their arches. There are many important peculiarities of the treatment of molding in this style which I cannot now touch on, and must hold over for the opportunity I hope may be afforded of continuing this, to me, interesting subject.

Now that we are satiated with the architecture of all countries and times, until, as some recent writer has cynically, and I hope too bitterly, told us, we have sunk into the state of used-up critics of art, who can never as a nation or people experience the first freshness of pleasure which the discovery of fresh fields of beauty gave our forefathers; when every year of our latter years has had its fashion of architecture—Tudor, Perpendicular, Early English—more recently the Venetian-Gothic, the Byzantine, and Early French fevers have had their day, and some of these architectural epidemics have localised themselves among us, we, however, who have toyed with the strange beauties of other lands may perhaps in this our maturer experience be not indisposed to return to one of our earlier loves, the noble and vigorous, yet tender and lovely architecture of our own land, of what is known as of the Early English period. Here in our own Ireland more particularly, the few churches which sacrilege and rapine and neglect have spared us for study will be found to present many worthy examples of the bold detail of one of the noblest schools of architecture which any country or age has seen.

IRISH CIVIL SERVICE AND GENERAL BUILDING SOCIETY.

On Wednesday evening, 21st ult., a general meeting of the members of this society was held in the Rotundo, for the purpose of approving the amended rules to be submitted for adoption, and for the appointment of officers of the society. The chair was occupied by Mr. J. H. OWEN, C.E.

The notice convening the meeting having been read by Mr. A. H. Mercer, secretary,

The chairman moved that the following gentlemen be elected members of the society:—John Sibthorpe, Esq., trustee; W. T. Hancock and R. F. Young, Esqrs., auditors; and George Hoyte and Geo. Moyers, Esqrs., arbitrators.

Mr. J. Dunne seconded the motion.

Some discussion followed as to general details, but the motion, on being put from the chair, was passed.

Mr. M’Vey asked why the name of Mr. W. P. Tomlins, of the Custom House, was omitted from the list of names of gentlemen proposed for election? Mr. Tomlins had been arbitrator on a former occasion, and he did not know why his name was now struck out.

The chairman replied that the omission was a printer’s error. It was compulsory on the society to have five such officers, at least, who should have no other connexion with the society whatever. Although it was necessary to have five arbitrators, the society was not limited to that number, and Mr. M’Vey might move the election of Mr. Tomlins as an amendment if he wished.

Mr. M’Vey, having then adopted the chairman’s suggestion, Mr. Tomlins was unanimously elected arbitrator.

The chairman then said that, before bringing before the meeting certain alterations that had been made in the rules of the society, it occurred to him that it would be right to preface his observations by stating what had been done during the past eight months. Eight months had elapsed since the last meeting, and at that period the receipts of the board from all sources were £5,840. Since then they had increased to £8,900. Their outlay had been, in loans advanced to shareholders, £8,830, together with other payments, amounting to £1,603—considerably over the amount they had already received; but from the

pressure brought on the board to make advances, and the numerous applications which had been before them—many of which they felt it impossible not to comply with—they had been led to overdraw their account with the Royal Bank. They were so far satisfied with their position already, however, as to feel perfect safety in doing so. As regarded the profit and loss account, the profit that they announced last June as amounting to £102 had been since increased to £287; that was, after providing for all interest, whether paid in cash on fully paid up shares, or added on the part of shares not paid up, after providing for every outlay, there was a profit equal to about four per cent over and above the guaranteed interest. They had had a great many withdrawals during the course of the last eight months—withdrawals amounting to over £400. In many cases those withdrawals had arisen from members having fallen into misfortune, from death and unexpected circumstances of all kinds. Wherever casualties of that kind had been properly represented to the board, it had been invariably their practice to allow those withdrawals as far as they could, and never to exercise the powers given to them of preventing those withdrawals. The society had been extraordinarily prosperous up to the present as compared with ordinary building societies, and considering that the whole scheme was so comparatively new in this country, he thought the amount of progress they made was shown by their having been able to receive and issue out a sum approximating to £10,000 in a year and eight months, which showed an amount of success arising from the accumulation of half-crowns that they could not anticipate. Apprehension had been excited in the minds of some members by the disassociation from amongst them of a well known officer, their late secretary, and the starting of a society that seemed to some extent to be in opposition to them. From the first he had always looked upon that society, undertaken as it was by the men who had taken it up without a guarantee, and the protection of the Building Societies’ Act of Parliament, as one of the most convincing arguments that could be brought forward as to the profitable nature of a Building Society as a speculation, its safety as an investment, and general proof of the success with which their work and management had been attended. If

it were worth the while of such men as Mr. McCullagh, their late director, Mr. Bagot, Mr. Lombard, and Mr. Carson to associate themselves without the facilities and guarantee which this society gave, as a limited liability company, or simply a building society under another name, it was a proof that with those advantages and the guarantee, they might be sure with moderate prudence to do a very safe, steady, and profitable business. It was another complimentary feature of that new society that its secretary had served his apprenticeship with them; and all the others, with one exception, had begun and got their knowledge of the mode of working by their association with this society. They wished them prosperity, of course, but at the same time thanked them for the certificate which they gave them to the world at large.

The chairman then proceeded to lay before the meeting certain alterations which had been made in the society’s rules.

A lengthened discussion followed as to several matters of detail, after which the meeting adjourned.

NEW MODE OF SAWING STONE.

INSTEAD of the saw ordinarily employed for sawing stone, a disc of lead, kept well covered with emery, has been used for some time past in France with great success and economy. The lead is cast on a circular plate of cast iron, of sufficient thickness and diameter, and pierced with holes, which, by means of the lead with which they become filled in the casting, unite together strongly the thin sheets of lead at its two sides, which are joined also at the circumference of the disc. The emery falls from a reservoir above the disc, and the surplus is conveyed into a trough underneath, whence it is brought back to the vessel which feeds the disc. This apparatus is either moved on a carriage to the rock which is to be cut, or the block of stone is brought up to it on a carriage. A saw of this description, about 3ft. 6in. in diameter, driven by a 4-horse power, was found to move through Carrara marble at the rate of about 2½ inches per minute, and through Normandy granite at the rate of nearly an inch in the same time; and the cost of cutting was scarcely the one-sixth of that with the ordinary method.—*Scientific Review*.

THE CHEMISTRY OF NATURE.

(Continued from page 53.)

AGAIN: if the first and second theories we are considering were true, that light and heat issue from the sun in every direction, spreading out from every part of his surface as a globe of light and heat, it will be evident, upon consideration, that the few straggling planets in the solar system could only intercept those particular rays of light and heat which would travel in those lines of direction in which they happen to be situated. If the quantities they would thus intercept were calculated it would be found that hundreds of millions of times more light and heat would pass off into space and be wasted than they could possibly intercept and make use of. This view of the case involves a prodigality of waste of light and heat entirely at variance with that wise economy of nature which teaches that nothing is wasted—that everything is produced at the right time and in the right place where it is wanted, which system of economy has been the admiration of the wise men of all ages. But, for the sake of further argument, we will suppose that such an absurd arrangement is to be brought into actual practice to-morrow. What will, then, be the consequences? We know by actual experiment that the quantities of light and heat that each planet would receive would decrease according to the square of the distance each one would be from the sun. Mercury would receive about seven times more light and heat than the earth is receiving. This would be sufficient to change it from a comfortable residence, as it no doubt is at present, to a visible dull red state of incandescence; all its waters would be dissipated as steam; all vegetable and animal life would be destroyed, and it would move in its orbit a lifeless void. Venus would receive double the quantity of light and heat that the earth is receiving. This would be more than sufficient to boil water at its equator, destroy animal and vegetable life, and cause it to assume the same lifeless state as Mercury. The earth would remain as it is, suitable for the support of animal and vegetable life, and be the only favoured one amongst all the planets. Mars, the next planet to the earth, is rather more than half its size, and would receive considerably less than half the quantity of light and heat that the earth receives. This would cause its temperature to be about the same as our polar regions, which you will admit would be anything but a comfortable condition of temperature. The large family of little asteroids are at such distances from the sun that the light and heat they would receive would be insufficient to support any fluid water or any kinds of animal or vegetable life that we are acquainted with; while the cold in Jupiter, Saturn, Herschel, and Neptune would be so insufferably great that we can form no idea of its severity,—even alcohol would freeze,—and on them no known kind of fluid, animal or vegetable could exist. We find it necessary to obtain fuel and burn fires where they are required over every part of the country. What should we think of a man who would propose to alter this arrangement by burning a large fire in the centre of England for the purpose of lighting and warming all the provinces? Should we not think him a fit subject for Bedlam? And yet the mode of supplying light and heat to the solar system, which the first and second theories teach, would be far more absurd, extravagant, and destructive; so much so, that it would be the very worst description of outrageous profanity to impute such an arrangement to our Great Creator.

It is probable that one of the principal reasons why it has been so generally supposed that light and heat come from the sun has been, that when the sun is looked upon the floods of light which impinge on the eye always come in the line of direction in which the sun is situated: hence it is supposed that they must emanate from the body of the sun himself. But we all know how easily our sense of sight can be deceived. To our sense of sight the sun, moon, and stars appear to travel round the earth, whereas we are all fully satisfied that they do not; and even the floods of light and heat which so impinge on the earth, and on the eyes of those who look in the direction of the sun, if carefully considered in all their bearings, prove the very reverse of what our sense of sight would lead us to believe. If light really emanated from the sun, when he is at the meridian he ought to appear equally fulgent and dazzling, or nearly so, from every part of the earth's surface, and the incident rays of light which impinge on the eye ought to be the same or nearly so, whether his disc is looked upon from the tropics or the arctic circle. But is this the case? Certainly not. Those persons who have attempted to view the sun from the tropics tell us that their eyes become so overwhelmed and deluged with light that it is impossible to look at him with unprotected eyes, whereas near the arctic circle his disc can be looked upon with comparative ease. How can this great difference in the

apparent fulgence of the sun, and the floods of light which are supposed to emanate from him, be accounted for? I am aware that attempts have been made to explain away the difficulty by saying that it is occasioned by the sun's rays impinging on the earth at different angles of incidence; but in the case just placed before you I have not alluded to light reflected from the earth, but to the incident rays that are intercepted by the eye, and which never reach the earth at all. Surely these cannot be affected by the angle of incidence at which they strike the earth, because at the tropics and at the poles they never strike it. When the rays of light do strike the earth, the explanation which has been given to account for the different results they produce is a myth. The grains of sand and the particles of earthy matter composing the earth's surface, even where it is smoothest, are microscopic mountains and valleys of enormous size when compared with the infinitesimally small atoms of incandescent electrical matter of which light consists; therefore, instead of those microscopic mountains and valleys reflecting light from their surfaces, like a beautifully finished glass globe mirror would do, they break and scatter the rays, and then absorb the light, equally and alike, whether they impinge on the earth's surface near the poles or at the equator itself. When powerful floods of light, such as are supposed to emanate from the sun, fall on any surface that does not absorb them, but reflects them off again, such rays can be collected on a screen placed at right angles with the angle of reflection, and they will then impinge on such screen with equal refulgence as they would have done if they had been received on the screen as incident rays before they were reflected. If a screen, such as I have named, were placed at right angles with the angle of reflection in which the sun's rays travel near the poles, how much light would the screen receive? None; because, for the reasons already explained, they would be absorbed by those microscopic mountains and valleys everywhere present on the earth's surface. Should any one doubt what I am stating, if they will fit out an expedition to the polar regions and prove that reflected light, or incident light, or both together, are equal in quantity with the rays of light which impinge on the earth at the equator, or even equal to one-fourth that quantity, I will re-imburse them the whole of their expenses. The fact is, it is an explanation that will not bear investigation, but disappears like the flimsy horns of a snail the moment it is touched.

I have already explained that, in consequence of the great difference in the amount of the earth's centrifugal force at its different lines of latitude, the quantity of atmosphere existing over and between those lines of latitude, will vary to exactly the same extent as the earth's centrifugal force varies, and that each will decrease in the same ratio from the equator to the poles. As at the equator there exists the greater quantity of atmospheric fuel, as there is formed the greatest amount of atmospheric flame, and there exists the highest and strongest column of flame to impinge on the eyes of and through which alone a spectator can look at the sun,—as the atmospheric fuel lessens in quantity from the equator to the poles,—so the atmospheric flame resulting from its combustion gradually lessens from the equator to the poles exactly in the same ratio, and so does the column of flame which impinges on the eyes of and through which a spectator must direct his sight to look at the sun. All this light being formed in the earth's atmosphere by the ignipotent power of the sun, it must form and fall on the earth in the line of direction in which the exciting power acts; hence it falls in the same line of direction as it would do if it really came from the sun himself. Therefore, when the sun is viewed from different parts of the surface of the earth—as he can only be seen through the flame which is always forming and existing in that part of the earth's atmosphere which is situated between the sun and his observer—so it is the floods of light of various degrees of volume and strength so forming and falling on his observer that produces those overpowering and dazzling sensations which are so distressing to the eye at the equator, but which are easily borne by it at the poles.

I have explained why there must be a larger quantity of atmospheric air over the earth's surface at the equator than there is at the poles; and it being a well-known fact that when light and heat pass through air quantities of them are absorbed in proportion to the quantities of air they have to pass through; therefore, it would necessarily follow that if light and heat were to come from the sun to the earth, as some people suppose, the smallest quantities of them would reach the earth's surface at the equator, because there would exist the largest quantity of air which they must descend through, which air would absorb them during such passage; and the largest quantities of light and heat would reach the earth's surface near the poles, because

there would exist the smallest quantity of air to absorb them before they impinge on it. Therefore, the known results are most completely at variance with the theory which supposes the sun to be the source of light and heat to the earth, and perfectly in accordance with the theory which I am advocating.

Again: if light and heat really come from the sun, as is supposed, the higher we ascend the earth's atmosphere towards the source of such light and heat the more powerful they would be, because they would have passed through a less volume of air to absorb them; whereas, on the contrary, aeronauts tell us that the higher they ascend the darker and colder the atmosphere becomes, and that at great heights, instead of the canopy of heaven looking brilliant with luminosity, as it appears when viewed from the earth's surface, it wears a dark, gloomy appearance. The only inference that can be drawn from these facts is, that the rays of light and heat grow or increase in power during their descent through the air, and as it is so opposed to all which we know of nature that any existence should grow or increase in the constitution of this earth which does not commence its existence in the same, we can only come to the conclusion that the infantile rays of light and heat commence their existence in the higher regions of the air, from the inflammable matter there existing, and gradually grow or increase during their descent by feeding on the inflammable matter with which they meet, until they impinge on and are absorbed by the earth's surface.

Again: there can be no doubt but that light is matter; it can be separated into three distinct descriptions of flame—red, yellow, and blue—each of which possesses different chemical properties, and also different specific gravities, because, under the same impulsive force, the red rays will go the furthest, the yellow the next, and the blue the least distance. This being the case, material light cannot come from the sun in opposition to the sun's power of gravitation, which attracts all its own matter towards its own centre; and because light is matter it could form no exception to the sun's general power of gravitation. I feel that my greatest difficulty will be to produce correct impressions on the minds of my hearers respecting the element, power. I will, therefore, adduce some further remarks upon it. You have all heard of the laws of nature. Everybody talks about the laws of nature. What are the laws of nature but certain real existing powers which control all natural existences under all circumstances, always acting the same under the same circumstances? What, then, have I been aiming at but to classify these immutable laws of nature under three separate heads or departments? In doing this I have stated that power, with matter or caloric, forms a component element in all natural existences, i.e., a certain quantity of power is chemically combined with the other two elements as the binding element which holds them together with more or less tenacity. For example: if we suspend a heavy weight by means of a piece of cord or metal wire we say the cord or the wire is strong enough to bear the strain; i.e., the innate power chemically combined in the materials of which the cord is composed, or in the metal of which the wire is composed, is sufficiently great in holding them together to counteract the power of gravitation which is acting by means of the suspended weight to rend them apart. In these cases the innate power in the cord or wire is superior to the gravitating power contained in the suspended weight. Not only is power thus chemically combined in every natural body, but as liberated active power it is also present in all natural existences, in a similar way that caloric in a latent state is chemically combined in every natural body, and in its liberated active state, as heat, it is also present in every natural existence. You may say, prove this to be the case. In order to do so, I will first invite your attention to the power of gravitation—mechanical power. It is admitted that the centre of the earth's gravitating power is in the centre of the earth itself, and that such power spreads in every direction as a globe of power, which has not only compelled the earth to assume a globular form, but it has bound its materials together in that form. That such power is not only innate or latent in the earth, but also acting in a liberated active state is proved by the fact that it forces the earth to revolve on its own axis once every day, and the power which so acts further manifests itself as that band of centrifugal power which must continually encircle the earth while the earth continues to revolve, and the liberated active power connected with the earth is also compelling it to continually travel in its own orbit at the rate of 68,000 miles an hour. This same element, power, is also connected with all the heavenly bodies; it has compelled them all to take the same globular form, and it has bound them in that form. Not only so, but it is connected with

them in its liberated active state, compelling each one of them to revolve on its axis, according to a regular order of time, and to travel in its own orbit at a certain rate of speed. In addition to all this, liberated active power is constantly acting and reacting between each and all of the heavenly bodies in each solar system. Surely all this must be sufficient to convince the most sceptical of the reality of the element power, not only in a latent state, but also in a liberated active state, in connection with all natural existences.

That the element power is chemically combined with and actively present in every existence indigenous to the earth can also be proved. Every drop of rain that forms is a proof of it, for not only is the element power chemically combined with the water, but it is also ever active in the water to form it into the globular shape the same as it has compelled the heavenly bodies to take, the centre of such power being the centre of such rain drop and spreading out as an independent globe of power the same as with worlds. Not only does this apply to the mechanical department of power; it also applies to the chemical department of power in connection with all existences, whether an atom or a world. To further illustrate this I will refer to vegetable growth. During vegetable growth mechanical power is ever active, drawing up the fluid sap from the earth into every part of such vegetable. While mechanical power is doing this, chemical power is decomposing water and combining its hydrogen with carbon and other ingredients to form the substance of the plant or tree, while vital power controls the forming and arrangement of the fibres into wood, leaves, fruit, and seed.

I may further illustrate vegetable growth by a very interesting experiment first made by Professor Hunt, who proved the power which light exercises over vegetation by placing pieces of blue, yellow, and red glass over sown seed. He found that, while absorbing the blue rays only, the power liberated from such blue rays combines with the germ of the seed and forces it to develop into the infant plant. The yellow rays of light only are then absorbed to supply the growing plant with the power to form the woody fibre necessary to constitute its body; and when it reaches that period of its existence when its procreative energies are called forth, the red rays only are absorbed to supply the power necessary to develop buds, flowers, fruits, and seed. Blue rays of light only are also absorbed to produce the power necessary to form the photographic picture; and, as I have already stated, I have no doubt but that light is always being absorbed by all visible objects, and power liberated, to affect our sense of sight, before those objects become visible.

Vital power is also diffused over the whole surface of the earth, and it manifests and develops itself in the infinite variety and myriads of millions of animal and vegetable existences which cover the earth, inhabit the ocean, and also of animal existences with which the lower regions of the atmosphere itself teems. All these not only prove the actual existence of vital power, but they also prove that it is ever active in generating a successive renewal of such existences. It is also admitted by philosophers that what they call "actinic" or "chemical" rays are emitted by the sun to the earth, mechanically distinct from, although transmitted with, the light and heat which they suppose are also emitted by the sun to the earth. I have already explained that a large proportion of the earth's atmosphere consists of compound inflammable gas; indeed, some philosophers have gone so far as to say that if the nitrogen gas were to be withdrawn from the atmosphere the remaining portion would combine with the earth's surface in a general state of violent conflagration. This being the case, it is reasonable to suppose that the earth is depending for light and heat upon the sun, which is 95,000,000 miles away, when it has all the materials necessary for its own illumination and warmth within a few miles of its own surface.

I trust I have advanced a sufficient number of facts, and deduced a sufficient number of arguments from them, to prove that philosophers are mistaken in supposing that light and heat come from the sun in mechanical association with the "actinic" chemical rays, which I call chemical or ignipotent power. Surely, if it be admitted that active chemical power comes from the sun, as I am contending for, there can be no great difficulty in understanding that such power, while passing through the earth's atmosphere, excites the inflammable matter contained therein into a state of combustion to supply the earth with the light and heat it receives. If this be admitted all further difficulty in understanding the chemistry of nature is at an end. Instead of the wasteful, destructive consequences involved in the received theories, which I have endeavoured to expose, each heavenly body would supply the proper fuel, at the proper time, and in the proper quantity for its own illumination and warmth, they

depending on their suns, and their suns depending upon them for an exchange of chemical power to excite and govern the combustion necessary for their respective requirements; in which case Mercury, instead of being in an incandescent state, and Venus in a boiling state, the surfaces of those planets may possess the same degrees of temperature as the earth possesses; and instead of Mars, the asteroids, Jupiter, Saturn, Herschel, and Neptune existing under the influence of insufferable cold, their supply of fuel may return them suitable temperatures for the existence of similar descriptions of animal and vegetable life with those existing on the earth; and the same with the sun itself. Permit me to invite you, on the first clear, bright day, to satisfy yourselves that combustion is actually going on in the earth's atmosphere continually. This may be done as follows: if you will stand with your backs to the sun, and look in a vacant manner for a minute or two towards the cerulean sky, you will discover an infinite number of infinitesimal but very distinct meteors, constantly igniting, travelling a short distance, and then expending themselves by combustion. They are so numerous and their movements are so eccentric as to resemble illuminated miniature flakes of snow during a violent snow-storm. These small meteors result from the production in the atmosphere, of minute streams of compound hydrogen gas, which inflame as they are produced, and supply the light upon which the descending rays of light feed during their descent from their infantile source, till they impinge on, and are absorbed by, the earth's surface. For the information of the existence of these infinitesimal meteors I am indebted to the late Professor Mavery, who, for fifty years, was astronomer and natural philosopher at the observatory attached to the Royal Naval Academy at Gosport. He was one of the first to oppose my views, as contained in the paper I have been reading, but after six years of opposition he became a convert, and was the first to acknowledge himself as such in the public newspapers in the year 1857. When we view the heavenly bodies themselves, distinct from the light in the earth's atmosphere through which we view them, we see them enveloped in light of their own, corresponding with their own forms, and confined within the limits of their own respective atmospheres.

"Those lambent fires, which the heavens adorn,
Are oceans of gaseous flame,
Enveloping one half or more, of distant worlds.
Each, as it turns within its concave blaze,
Pours in fresh fuel, and in return receives
Heat and material light for constant change."

DUBLIN AND BELFAST JUNCTION RAILWAY.

At the forty-first half-yearly meeting of the above company, held on the 24th ult., the following reports were submitted to the proprietors:—

The traffic during the half-year ended 31st December last produced £43,759 10s., being an increase of £5,739 2s. 3d. as compared with the receipts from the same source during the corresponding period of the previous year, as follows:—1865—Passenger traffic, £27,709 11s. 6d.; merchandise, &c., £13,058 12s. 8d.; mails, £2,991 5s. 10d. Total, £43,759 10s. 1864—Passenger traffic, £22,736 13s. 2d.; merchandise, &c., £12,314 12s. 11d.; mails, £2,969 1s. 8d. Total, £38,020 7s. 9d. Increase, passenger traffic, 1865—£4,972 18s. 4d.; merchandise, £743 19s. 9d.; mails, £22, 4s. 2d. Total, £4,739 2s. 3d. Although the amount received for passenger traffic was increased by the International Exhibition, still there has been an encouraging indication that your general revenue is steadily progressing. The following statement shows the results of the working of the line for the last year compare very favourably with those of 1864, viz.:—1865. Receipts, £80,470 13s. 5d.; expenditure, £43,446 11s. 1d.; nett income, £37,024 2s. 4d. 1864—Receipts, £74,030 18s. 3d.; expenditure, £45,612 5s. 1d.; nett income, £22,428 13s. 2d.; showing an increased income of £6,439 15s. 2d., and a decrease in expenditure of £2,165 14s., making together £8,605 9s. 2d. The total income of the Company for the half year amounted to £44,539 9s. 11d., the working expenses to £14,327 3s. 2d. (32½ per cent. of the traffic receipts), and the total expenditure to £22,233 3s. 10d., leaving as profit £22,306 6s. 1d., which, with £1,899 5s. 1d., brought forward from the last account, leaves at your disposal £24,205 7s. 6d., from which the Directors recommend a dividend to be declared, at the rate of 4½ per cent per annum (less Income Tax) after payment of which £4,551 12s. 6d. will remain to be carried to credit of current half-year. The Directors have pleasure in calling your attention to the fact which was alluded to in the last report, that, in consequence of the issue of debentures and debenture stock, as authorised by the Company's Act of 1864, the charge for interest on loans in the present account shows a decrease of £2,471 as compared with the corresponding period of 1864. The Newry and Armagh Railway Company having given notice of a bill, to be promoted in the present

session of Parliament, seeking "running powers" over that portion of your line situated between Gorragee and Portadown, the directors consider it necessary for the protection of your interests, that this measure should be opposed, and they propose to take such steps as may be deemed right for this object. At the approaching meeting Messrs. Barlow, Hutton, Donagh, and Colvill, directors, and Mr. Nathaniel Hone, one of your auditors, retire by rotation. All of them are eligible for re-election. The accounts have been examined by Mr. Samuel Bewley, absence on the continent having prevented the attendance of his co-auditor, Mr. Hone. During the half-year the permanent way and works have been maintained in an efficient state, and the rolling stock in good working order.

F. R. FENNESSY, Sec.

ENGINEER'S REPORT.

GENTLEMEN,—I beg to submit usual report of this department for half-year ending 31st December, 1865. During that period, notwithstanding some high floods and storms, your line has been effectively maintained, and without accident. Upwards of 15,000 tons of ballast were laid on road, the larger part of which is packed in. One embankment, through floodlands near Tandragee, has required to be slightly raised and improved. One bridge only (near Newry) required exceptional repair, but without material cost. Some additional outlay was necessitated by severe weather to keep stations and other buildings in repair. For the foregoing reasons chiefly, the half-year's expenditure in this department has been more than usual. The viaducts and heavier works continue in the soundest condition. The modifications in last part of "broad flange" (or Barlow) road, to which I referred in my report for last half-year are completed, with the exception of some intermediate sleepers, being still required.

D. J. ROWAN.

OUR SCIENTIFIC INSTITUTIONS.

We take the following extracts from the Minute of Committee of Council on Education relative to scientific institutions in Dublin. After reciting various reports, the Minute proceeds:—

My lords are prepared to adopt the general principle of the recommendation of the Select Committee. They therefore determine that the grant of public funds shall in future be afforded in Dublin (1) to instruction in science applied to industry as one public object administered wholly by authority; and (2) to the exhibition of scientific collections as a second public object to be administered by another distinct authority. My lords propose that the following departments of the Royal Dublin Society shall be wholly supported by public funds, like the corresponding public institutions in London, the society acting as trustees and being responsible for their administration:—The Museum of Natural History, including Mineralogy. The Botanic Gardens and Museum at Glasnevin. The Library of the Royal Dublin Society. Leinster Lawn, which would be made a public ornamental garden, instead of remaining, as at present, a waste space between the National Gallery and the Museum of Natural History. The whole of the premises of the Royal Dublin Society, and the necessary staff of the society for conducting the business involved in the above-mentioned objects. The theoretical limitation of the amount of public funds to £5,500 annually should be abolished, and the annual grants necessary for keeping the above departments in efficiency considered on merits and submitted to Parliament every year.

MUSEUM OF IRISH INDUSTRY.

Turning to the Museum of Irish Industry, my lords find that the Select Committee recommended one of two courses, either that the Museum of Irish Industry should have at least the same scope given to it as the Museum in Jermyn-street, and be placed on the same footing as a school of mines as regards its collections, professors, and lectures, or that those lectures and collections might be extended to the illustration of such other industrial objects as may be sanctioned by the Government. It would appear that the one School of Mines already existing in Jermyn-street is not largely attended, and is amply sufficient for the wants of the whole United Kingdom, and there probably would not be sufficient attendance to justify the establishment in Ireland of a second school with a large staff, for this object alone, as the few special mining pupils from that country might easily join the school in London. My lords consider that, for these and other reasons, the Museum of Irish Industry should have a wider scope given to it than that of a school of mines; that it should become a college for affording a complete and thorough course of instruction in those branches of science which are more immediately connected with and applied to all descriptions of industry, including agriculture, mining, and manufactures. The Museum of the College of Science should be entirely subordinate to, and contain only such collections as are essential to the instruction in the college, but should still remain the depository for

the collections of the Geological Survey. It is advisable, therefore, that the museum should hand over to the Royal Dublin Society its Portlock collection of birds and fishes, and receive from the Royal Dublin Society its collection of physical instruments and apparatus. This arrangement, embodying the spirit of the recommendations of the Select Committee as respects both the Royal Dublin Society and the Museum of Irish Industry, my lords believe to be based upon a broad, clear, and intelligible principle of action. They trust that it will remove the present causes of controversy, and commend itself to the judgment of Parliament.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the Ordinary General Meeting of the Royal Institute of British Architects, held on Monday, 12th February, 1866, George E. Street, Vice-President, in the chair, the honorary secretary, Mr. C. F. Hayward, read the reports of the examiners and moderators appointed to conduct the Voluntary Architectural Examination for 1866, and announced that all the candidates who had presented themselves had passed their examination. A cordial vote of thanks to the examiners and moderators for their valuable services, and for the able and satisfactory manner in which they had discharged the arduous and onerous duties connected with the examination, was passed. The honorary secretary also announced that the Pugin Travelling Studentship for 1866 had been awarded to Mr. Hubert J. Austin, of 20, Spring Gardens.

A paper on the Cathedral of St. Canice and other architectural antiquities at Kilkenny, Ireland, by Mr. T. Newenham Deane, Fellow, of Dublin, was read by Mr. J. P. Seddon, honorary secretary, which was followed by an interesting discussion in which the chairman, Professor Donaldson, past president, and Mr. Seddon, Fellows; Mr. Hills and Mr. Morris, Associates, took part, and a vote of thanks to Mr. Deane having been carried by acclamation, the meeting adjourned till Monday, the 26th inst.

A PHILANTHROPIC EFFORT.

On Monday last was opened a cooking depôt and restaurant, intended chiefly for working men employed in the vicinity of the docks and quays, but which will probably be much frequented by emigrants and passengers arriving and departing by the various steamboats. The premises, No. 13, North Wall Quay, have been fitted up in a suitable manner, under the superintendence of a committee of gentlemen. From what we have seen of similar establishments in London, Glasgow, &c., and also from the fact that the matron engaged has had practical experience in the management of one of those in existence in the latter city, we may predict that the one now started, if conducted on similar economic and commercial principles, will be sure of proving a boon to the working classes as well as remunerative to the projectors. The prospectus issued by the Committee is before us, which, after stating that in England and Scotland "cooking depôts" are numerous, and that the system has been extended to Belfast, proceeds:—

"The much smaller population of Dublin, and the habits of the working classes differing widely from those in other cities, preclude the hope that any such extraordinary development will be attained in this city, as that which has followed Mr. Corbett's labours in Glasgow; nevertheless, it may be reasonably expected that a portion of those who live now on inferior and badly cooked, but not always inexpensive food, and who are but too frequent visitors of the public house, may be attracted by the superior comfort and cleanliness of the cooking depot, where the best provisions would be promptly served at prices only sufficient to cover the expenses incurred, and a moderate interest on the capital involved, to be in this instance set apart as a reserve fund."

We understand that the cooking apparatus has been for the most part supplied by Messrs. Smith and Wellstood, of Capel-street, whose stands at the recent International and other exhibitions attracted so much notice. Besides a range and oven constructed on the most approved principles, there are two boilers capable of containing fifty gallons each, and the other usual culinary requirements for cooking on a large scale, and which are of the best and most modern construction. We trust that this new undertaking will be appreciated by the classes for whose advantage the restaurant has been established, and we shall be happy to chronicle similar philanthropic efforts for the welfare of our artisans and labourers in other quarters of our city.

IRISH NEWS.

The Earl of Annesley has granted to the Rev. Mr. Hanna, P.P., a site for a national school on his property at Newcastle, Co. Down, on condition that the schools shall be built according to plan of which

his lordship approved. The estimated cost is £500. Architect, Henry Smyth, Esq., C.E. Tenders up to the 20th inst.

The old bridge at Kilkenny, known as St. John's Bridge, which connects Roseinn-street with John-street, is about to be taken down and a new flat bridge erected in its stead. Tenders for removing the old and erecting the new, not to exceed £3,000, from the 23rd inst.

Tenders for extending and improving the wall of Carrigaholt harbour, Co. Clare, will be received by the Board of Works up to the 16th inst.

Shops are to be erected by Messrs. Hamilton and Stirratt, architects, in High-street, Belfast. Tenders requested.

For the Lough Neagh drainage there were 120 tenders for 32 contracts. Proposals were accepted provisionally to the amount of £543 16s. 6d. These contracts were with few exceptions below the estimate. The trustees of this drainage district expend about £1,000 a-year on their works.

A new front and some internal improvements are being made at the establishment of Messrs. Seale, outfitters, No. 98, Grafton-street, according to plans, &c., furnished by Mr. Lyons, of 25, Westmoreland-street, architect.

A grocery establishment in the neighbourhood of the North Wall is to be rebuilt under the same architect, as a gin palace and hotel.

An extensive bonded store covering an area of 32,500 square feet, is being erected at the Messrs. Roe's distillery, Watling-street. Mr. W. G. Murray, architect; Mr. George Moyers, builder.

MISCELLANEOUS.

Mr. Edward Wilson, of Ballymagrechan, near Newtownards, County Down, in digging in a bog on his property a few days since, came upon the skull and antlers of the extinct species of the elk. Each horn measures six feet in length, and eight feet from both extremities. The teeth are in a perfect state of preservation.

In speaking of the election to the Presidency of the Royal Academy, the London correspondent of a provincial contemporary says:—The rejection by your distinguished countryman—Mr. Daniel Maclise—of the Presidency of the Royal Academy has caused much dissatisfaction to his friends. He is unquestionably the most popular of all the R.A.'s, not only out of doors, but, what is more remarkable in its way, among his own colleagues. Had he allowed himself to be put in nomination he would have had a unanimous vote, but he frankly told his brother Academicians that nothing would induce him to come forward, and that any votes recorded for him would only be thrown away. Mr. Grant, the portrait painter, was then put in nomination, and was elected by a very large majority. The mode of voting in the Academy is by handing each member a printed list containing the names of all the R.A.'s, and, as all are equally eligible to serve the office, the voter puts his pen through every name, save that which he considers most suitable to be President. On the recent occasion several single votes were recorded—thus Mr. Knight, Mr. Calderon, and Mr. Abraham Cooper got one vote each, which caused a good deal of laughter. Neither the sculptors nor the architects had the slightest chance, or I suppose ever will, although Sir Wm. Chambers, the architect of Somerset House, was one of the founders of the Academy. It is a popular error to suppose that the President receives an allowance of £300 per annum in order to enable him to keep a carriage. The three hundred a-year in question is intended to be expended on entertainments—dinners to the Academicians and distinguished foreign artists who may happen to bring introductions to the President; but Sir Charles Eastlake, the late Magnus Apollo of Trafalgar Square, gave but three little dinners a-year, which were computed to cost something less than a third of his allowance. Mr. Millais, R.A., who is in Rome, has just sent home a three-quarter size marble statue of "Leda and the Swan," said to be the last work of Michael Angelo. He gave £300 for it in some poky old curiosity shop, and connoisseurs value it at several thousands. "Like Millais' luck," everybody says. The statue, which is not quite finished, has been sent to the South Kensington Museum.

Mr. Foley's model for the bronze statue of Lord Herbert of Lea, which is to be placed in front of the War Office, Pall Mall, is complete. It exhibits the deceased minister standing in his peer's robes, the head resting upon the palm of one hand, which is sustained at the elbow by the other.

A terrible illustration of the necessity for making the doors of all places where large assemblies are gathered to open outwards has just been afforded by

the destruction, by fire, of fifty-four men in a wooden building at Cronstadt, of which the only means of egress opened inwards, so that when the imprisoned and imperilled creatures strove to escape, their own terror gathered them *en masse* against the door, and their weight kept it firmly closed.

The Prince of Wales has accepted the Honorary Presidency of the Archaeological Congress in London, in July. In addition to other arrangements announced last week, we may state, that the Dean of Westminster will probably give an historical account of the Abbey of which he is the head,—that Mr. Gilbert Scott will describe the structure,—and that Prof. Westmacott will give an account of the monuments. It is likely that Prof. Willis will describe the architectural features of Eton College. Mr. Hepworth Dixon will give a descriptive and historical account of the tower of London. Dr. Keller, of Zurich, and Mr. Worsaae, of Copenhagen, will probably attend as representatives of Continental archaeologists.

M. De Coraux, a Lyonnese, has invented and constructed a ship which can load or unload itself automatically in forty minutes. The captain and mechanician are the only living crew on board, the working and manipulation of the vessel and cargo being all performed by steam applied to most ingenious machinery. The loading is carried on by trucks and waggons, which can contain corn, flour, bales, cattle, horses, barrels, &c. The vessel is, as may be expected, of a peculiar disposition; but its exterior bears all the signs of sea-worthiness. The great revolution is on the deck and in the interior. The former is covered with lines of rail, reaching from one extremity to the other, while, at midships, there are two turntables. Front and rear are two or four immense cages, containing eight, twelve, or sixteen waggons, of the same size as our railway-waggons. The rails on which the waggons rest are adapted exactly to the rails of the deck. A cable is hooked to the waggons, which traverse the deck throughout its length, and the stern of the boat having been previously placed on a level with the quay, which is also furnished with rails, or may be, perhaps, a portion of the terminus, the waggons glide without the least interruption from the vessel to the land, and *vice versa*.


TENDERS.

DROGHEDA BRIDGE. John Neville, M.R.I.A., Engineer, Dundalk. The following tenders were received for this work, which, owing to the default of the late contractor, was again advertised for. The tenders here given allow for the value of all plant and materials on the ground:—

	Single arch.	Two arches.
Mr. F. Rummens, St. Alban's, Herts	£8,016	None.
Mr. John C. Morris, Dublin	£8,500	£7,300
Mr. A. Pilling, Bolton, Lancashire	£10,200	None.
Messrs. Hammond, Drogheda	£10,400	£7,000
Messrs. Brennan & Costelloe, Dublin	£11,328	£6,657

Messrs. Brennan and Costelloe were declared contractors for £6,657.

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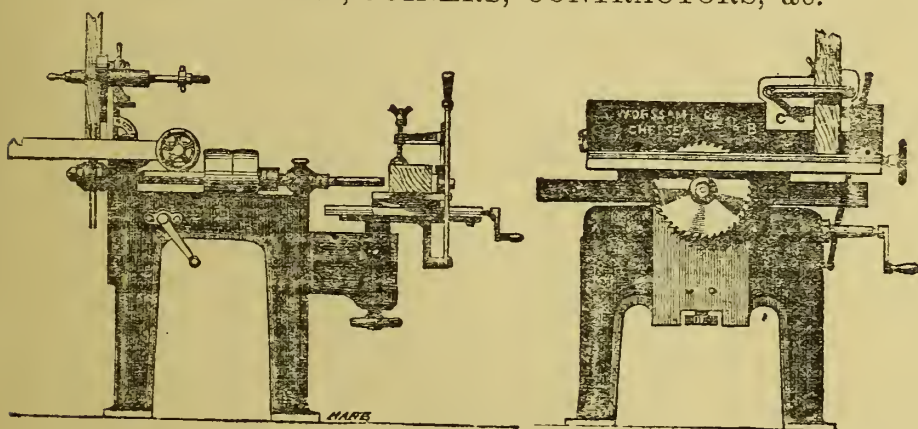
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War Office, Pall Mall, London, S.W.,

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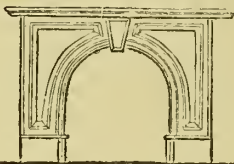
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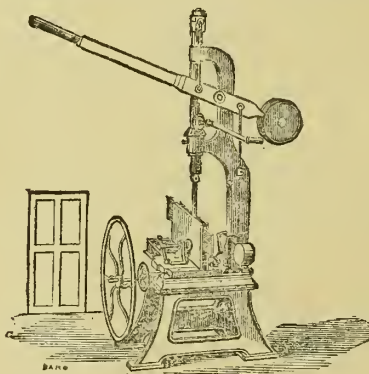
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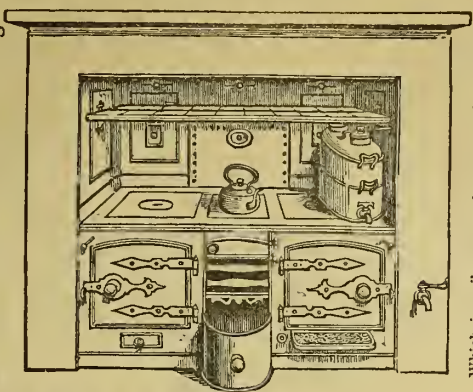
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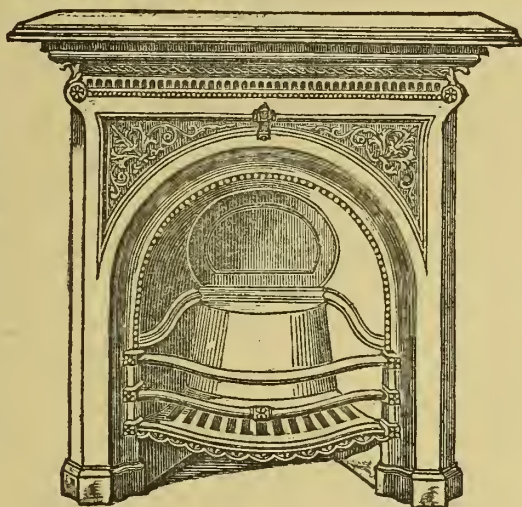
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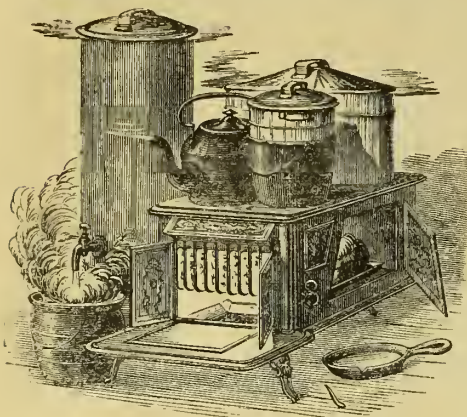
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Person of many years' experience and of superior ability. A low salary will be accepted under circumstances of which the fullest particulars may be obtained by reference to the Editor of the DUBLIN BUILDER, 42, Mabbot-street, Dublin.

Iron Founders, Plumbers, &c.

PRIZE KITCHEN RANGES.



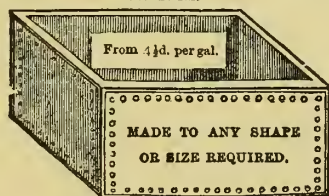
INTERNATIONAL EXHIBITION, 1865.

SMITH AND WELLSTOOD'S COMPLETE KITCHEN RANGES and FAMILY COOKING STOVE are to be seen in operation in all parts of the country. They steadily supersede all the ordinary construction of Range; their superiority in efficiency, economy, and cleanliness, simplicity of management, durability of construction, and suitability for all places and purposes being undeniable. They require no brickwork or other setting, suit any size or description of fireplace, and effectually cure any smoky chimney.

H. N. SMITH, Agent,
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Where they may be seen in daily operation and in great variety of size and design. Illustrated circulars on application.

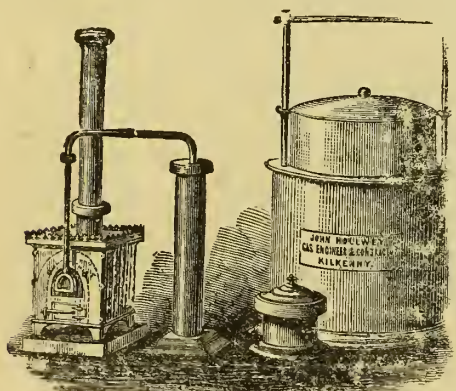
GALVANIZED WROUGHT IRON CISTERNS.



From 4½d. per gal.
MADE TO ANY SHAPE OR SIZE REQUIRED.
MANUFACTURED BY
TUPPER & COMPANY,
61A, MOORGATE STREET, LONDON, E.C.
Galvanized or Lead service Pipe, Brass Ball Valves, Bib Cocks, &c.
Prices delivered in London.
N.B. A Discount to the Trade, Builders, &c.

TUPPER AND COMPANY,

Manufacturers of
PATENT GALVANIZED IRON, and
GALVANIZED TINNED IRON, CORRUGATED and PLAIN;
Also
Patent Galvanized and Galvanized Tinned Tiles,
Estimates and Drawings furnished for Iron Houses, Churches,
Roofs, Sheds, Stores, &c.
All sorts of Iron Work Galvanized
MERCHANTS and SHIPPERS SUPPLIED.
Works—LIMEHOUSE and BIRMINGHAM.
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SMALL PORTABLE OR FIXED GAS

WORKS for Villas, Mansions, Railway Stations, Farm Steadings, &c., or any Establishment where from 20 to 50 or more lights are required. These small works are both simple, cheap, and effective; can be worked by any ordinary laborer, and will produce Gas from Coal, Cananal, or Peat at a small cost. Larger sizes for Villages, Towns, and Cities.

Prices, Plans, and every information afforded on application to the Manufacturer,
JOHN HOLLWEY,
GAS ENGINEER & CONTRACTOR,
KILKENNY.

NOTICE TO BUILDERS.

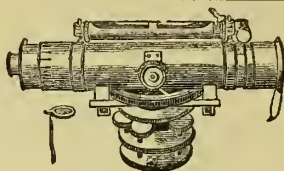
SHEET LEAD and LEAD PIPE, of the best quality, the former in Sheets, or cut to dimensions.
BROOKS, THOMAS, & CO.,
SACKVILLE-PLACE, DUBLIN.

GAS WORKS FOR COUNTRY RESIDENCES, TOWNS, &c.

J. EDMUNDSON AND CO. are Contractors for the Erection of Gas Works of any magnitude. They undertake to supply and erect the Apparatus, lay Street Main Pipes, and Service Pipes, supply and fix Meters, House Gas Fittings, Public Lamps, &c., and are prepared to furnish, free of expense, detailed Plans and Tenders to Town Commissioners or others requiring information relative to the Gas Lighting of Towns, Villages, or large Public Establishments.

J. EDMUNDSON AND CO. are Sole Proprietors of **WIGHAM'S PATENT PORTABLE GAS APPARATUS**. This Apparatus meets the want long felt of Cheap, Portable Gas Works, by which Country Houses of every size may be lighted by Gas. The Manufacture is very simple, and the light produced good and cheap.

J. EDMUNDSON AND CO.,
Gas Engineers, Contractors, and Ironmongers,
33, 34, 35, and 36, CAPEL-STREET, DUBLIN.



THEODOLITES, LEVELS, CIRCUMFERENCES.

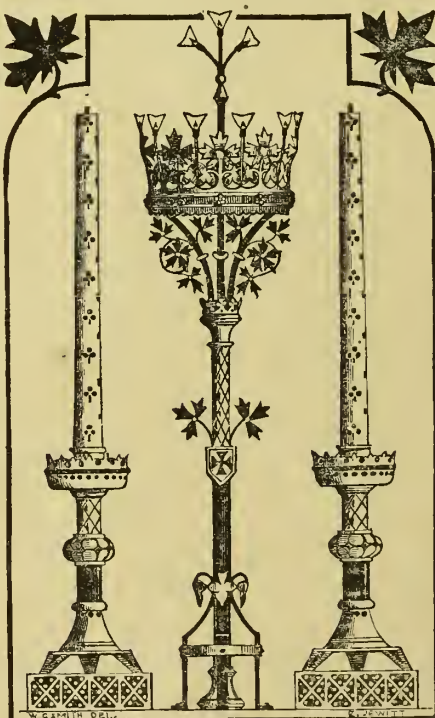
RENTERS, MATHEMATICAL DRAWING INSTRUMENTS, SCALES, RULES, TAPES, T SQUARES, &c.

JOHN ARCHBUTT, 20, Westminster Bridge Road, Lambeth, near Astley's Theatre, respectfully calls attention to his Stock of the above articles, manufactured by superior workmen. The prices will be found considerably lower than ever charged for articles of similar quality. An illustrated price list forwarded free on application. 8-inch Dumpy Level complete, 6 guineas; 10-inch ditto, 8 guineas; 14-inch ditto, 10 guineas; with compass, 1 guinea each extra. Best 5-inch Theodolite, divided on Silver, 18 guineas.

HEATING BY HOT WATER.

OUR IMPROVED, SELF-FEEDING,
Slow-combustion, Vertical Tubular Boiler, for Heating Green-houses, Vineries, Churches, Public Buildings, Warehouses, &c., has proved itself most efficient from its immense heating powers, combined with small consumption of fuel. Our system of laying down Pipes is also worthy of attention.

HODGES AND SONS,
MANUFACTURING IRONMONGERS,
16, WESIMORLAND-STREET, & 20 and 21, ASTON'S QUAY.
N.B.—Plans, Specifications, and Estimates, free on application.
Agents for Milner's Fire-proof Safes and Hornsby's Patent Washing and Wringing Machines.



WILLIAM CURTIS AND SONS

Manufacturers of
MEDIAEVAL BRASS WORK

FACTORY—CHANCERY-LANE,
OFFICES WAREHOUSES, AND LEAD WORKS—
99, MIDDLE ABBEY-STREET, DUBLIN.

POOLEY'S PATENT WEIGHING MACHINES.

—These Machines are used upon the principal railways of Great Britain, and are unrivalled for accuracy. Specimens may be seen, and every information obtained from
H. SIBTHORPE AND SON,
11 & 12, CORK HILL, DUBLIN.

STEAM BOILERS, TANKS, ETC.

WALPOLE, WEBB, and BEWLEY, IRON SHIP BUILDERS, DUBLIN, having extended their Premises, are now prepared to construct all classes of LAND and MARINE BOILERS, WROUGHT-IRON TANKS, GIRDERS, &c., and to execute repairs on same.

EAGLE IRON WORKS, 158, CHURCH

STREET, DUBLIN. **LAURENCE MURPHY**, Proprietor. L. M. begs leave to direct the attention of his numerous Patrons and the Public to his large and varied assortment of Ornamental Entrance Gates, and Piers, Field, and Haggard Gates, Hurdle Fence, Garden Chairs and Vases; as also Wrought Iron Fire Proof Safes of various sizes to 30 cwt. weight.

MANNIN'S Wholesale and Retail Drug,

On, COLOUR, and GLASS WAREHOUSE,
2, GREAT BRUNSWICK-STREET,
(near D'Olier-street.)

Cattle Medicine of all kinds
N.B.—Every article is warranted genuine, and at the lowest price.

NEW STREET LAMP.
(THE SACKVILLE LANTERN.)

GREGG AND SON beg leave to introduce to the notice of the public a Lantern for indoor or outdoor use which they have recently patented. Before proceeding to detail its qualifications they will briefly advert to those in present use.

Public Lamps are generally encased in clumsy metal frames, which obscure the light and cause large shadows to fall on the ground; the top of the lamps have usually clear panes, which allow the rays to pass upwards and are lost in the air, leaving only one half the light for use.

The advantages of the Patent Sackville Lantern are—That it ECONOMIZES 75 PER CENT. OF ITS LIGHT by means of a reflector; this reflector, being "white glaze," sheds a uniform bright light, and, being impervious to smoke, is easily cleaned. The Lantern is lighted by a pole, no ladder being required. From its construction SHADOWS are ALMOST AVOIDED. It is less liable to damage from storm than flat-sided lanterns. The whole can be put together or taken apart by three screws top and bottom. It can be attached to any pillar, bracket, or ceiling, and it is much CHEAPER than many of the ornamental lamps now in use. The Sackville Lantern, plain or ornamental, is suited for streets, public buildings, corridors, courtyards, railways, landing stages, &c., &c.
Prices and Designs at 18, UP, SACKVILLE-ST., DUBLIN.
The Trade supplied.

IMPORTANT TO GAS CONSUMERS.

A SAVING OF FROM 5 TO 30 PER CENT. FOR A BETTER LIGHT.

J. MANES & SON, 12, HIGH-STREET, DUBLIN, Manufacturers of every description of GAS BURNERS, on economical principles, and PORTABLE GAS LAMPS, beg leave most respectfully to offer to the Gas Consuming Public an improvement in Gas Burners, containing the following advantages:—A self-regulating Preventative of waste of Gas, Deposits of Carbon, Noise while Burning, and an Improvement in Combustion.

SHEEPHOUSE LIMESTONE QUARRIES,
DROGHEDA.

FOR Samples of the above Stone, the Proprietors direct the attention of **ARCHITECTS and BUILDERS** to the new Union Bank, College Green, Dublin, the Lime Stone Dressings of which were prepared and furnished exclusively from this Establishment.

For Prices, &c., apply to

A. & N. HAMMOND.

Sheephouse Quarries, or Office, John-street, DROGHEDA.

MESSRS. EARLEY and POWELLS beg to announce that Messrs. John Hardman and Co., of No. 1, Upper Camden-street, have resigned the business of Artists, Sculptors, Church Painters, and Metal Workers, in their favour.

Earley and Powells have added to the above mentioned business the Painting and Staining of Windows for ecclesiastical and domestic buildings, under the management of Mr. Henry Powell, who conducted the Stained Glass Department of J. H. and Co., Birmingham for many years.

Mr. Thomas Earley is the only Church Decorator living who was taught his profession by the late A. Welby Pugin.

E. and P. being thoroughly practical men in each Department, are enabled to supply real artistic work at a moderate cost. They, therefore, respectfully solicit the patronage of the Clergy and Gentry of Ireland.

CAMDEN-STREET WORKS, DUBLIN.

TO ARCHITECTS and GENTLEMEN HAVING MANSIONS IN COURSE OF ERECTION.

HOGAN AND SONS, Stucco Plasterers, General Cement Workers, Modellors, &c., 168, GREAT BRUNSWICK-STREET, DUBLIN, beg leave to state that they are prepared to undertake Contracts in the above line.

Ornaments for Cornices & Centre-Pieces for Ceilings supplied. FRONTS OF HOUSES done in Portland or Roman Cement. Materials supplied.

COUNTRY ORDERS strictly attended to, and first class workmen sent to all parts of the country.

N.B.—Pattern Cornices enriched, on view at the Establishment.

WHITE BRICK.

THE Subscribers, as Agents for Ireland for Messrs. Allan & Mann, of Glasgow, would invite the attention of Architects and Builders to the unrivalled Brick manufactured by this Firm.

These are, in every respect, superior to any other White Brick manufactured.

Sample boxes and Price Lists will be sent free on application to

W. D. HENDERSON & SONS,
14, CORPORATION-STREET, BELFAST.

Dublin: Printed and Published by and for the Proprietor, PETER ROE, at the Office, 42, Mabbot-street. May be had direct from the Office, or through any Bookseller.

The Dublin Builder.

ILLUSTRATED RECORD OF ART, SCIENCE, INDUSTRY, & MANUFACTURE.

No. 150.

PRICE .. 3d.
PER POST, .. 40.

MARCH 15, 1866.

1st & 15th
OF EACH MONTH.

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ILLUSTRATION:
NEW DOMINICAN CHURCH, TRALEE.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND, 212, GREAT BRUNSWICK-STREET. SESSION 1865-6.

THE PRESIDENT'S PRIZE OF £10, to be open to Competition by Students of the Institute or Members of the Class for Architectural Study. The subject to be a Villa, to cost not more than £2,000 nor less than £800, computed at 6d. per cubic foot measuring from the ground line to the upper side of wall-plate of roof. The computation to be stated on the Drawings. The Drawings to consist of plans of each floor, an elevation of each front, two sections, and at least one perspective. Scale, 8 feet to an inch. All Drawings to be figured both as to general dimensions and scantlings. An outline specification to accompany the plans. The Drawings to be prepared for hanging. The Drawings and Papers to be sent to the Assistant Secretary on or before the 1st day of June next, under the competitor's own name.

The decision of the prize will be made at the regular meeting of the Institute on the 21st of June, 1866, which will be specially summoned for that purpose. The Judges will be three Fellows of the Institute named by the Council, who will be requested to take into consideration the experience and standing of the competitors, as well as the relative merits of the designs themselves. In case of no design of sufficiently high merit being sent forward, the Council reserve the power of withholding or dividing the prize; and should an unsuccessful design exhibit proofs of great merit, the author thereof will be awarded one of the medals of the Institute. The Judges will report to the Council on each design submitted in competition. By Order,

JAMES H. OWEN, M.A., Hon. Sec.
Dublin, February 24th, 1866.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND, 212, GREAT BRUNSWICK-STREET. SESSION 1865-6.

The Council give notice that they will award the Fitzgerald Silver Medal for the best Set of Drawings from the sement of the ancient Church of St. Audoen, Corn Market, Dublin. The Competition is open only to the Fellows, Students, and Associates of the Institute, and to members of the Class for Architectural Study. Drawings to be to a scale of eight feet to one inch. Note-books containing the original sketches and measurements to be sent in as a test of accuracy, and will be returned to their respective owners.

Drawings to be sent in before the first meeting of the Session 1866-67 (November 15th, 1866), addressed to the Assistant Secretary. By Order,

JAMES H. OWEN, M.A., Hon. Sec.
10th March, 1866.

TO ARCHITECTS, COUNTY ENGINEERS, &c.

A Royal Coat of Arms, as well as a Figure of Justice, in Terra Cotta, suited for Surmounting a Jail or Court-house, or any class of Building; also a Group of Figures forming a Clock, adapted for fronts of Business Houses, Public Buildings, Courtyards, &c. The above may be seen at

THE M'ANASPIES,
STATUARY ARTISTS AND STUCCO PLASTERERS,
31, GREAT BRUNSWICK-STREET, DUBLIN.

Contracts.

WAR DEPARTMENT CONTRACT.

NOTICE TO BUILDERS.

Office of Commanding Royal Engineer in Ireland,
Dublin Castle, 5th March, 1866.

TENDERS are required from persons desirous of entering into Contracts (from the 10th April, 1866, to 31st March, 1867, inclusive,) for the performance of such Artificers' Work as may be required at the undermentioned Stations, viz.:

BELFAST DISTRICT,

(As per Schedule A)

BELFAST BARRACKS,

With 8 per cent. in addition for Rifle Ranges, &c., at Newtownards.

Persons desirous of Tendering may obtain every information up to Wednesday, the 21st March, 1866, inclusive, on application at the District Royal Engineer's Office, Belfast; and Printed Schedules of the Prices, with the Terms of Contract and Letter of Tender, may be obtained upon making a deposit of Ten Shillings for the same, which deposit will be repaid if the Schedules are returned unopened within Two Months from date of issue.

The Letters of Tender to be sealed, and transmitted under cover to "The Director of Contracts, War Office, Pall Mall, London, S.W.," so as to be received on or before Saturday, the 24th March, 1866, and to be marked on the outside "Tender for Works at Belfast and Newtownards."

BOARD OF PUBLIC WORKS.

NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be received up to the hour of 12 o'clock noon, on the 21st of MARCH, 1866, for BUILDING

A BOAT-HOUSE, WATCH-ROOM, AND LAUNCHING SLIP at BANGOR COAST-GUARD STATION, County Down, according to Plans and Specification to be seen at the Office of WILLIAM GRAY, Esq., Mount Charles, Belfast.

Each Proposal should be for a lump sum, and must be accompanied by a separate Detailed Estimate, giving Quantities and Prices, and be endorsed "Tender for Boat-house, &c., Bangor, County Down."

Both Tender and Detailed Estimate should bear the Name and Address of the Proposer on the back.

Printed Forms for Tenders can be had from Mr. Gray.

N.B.—Persons Tendering should send in Testimonials as to character and competency, unless previously known to the Board.

By Order of the Board,

EDWARD HORNSEY, Secretary.

Office of Public Works,
Dublin, 5th March, 1866.

* If this be not attended to, the Board cannot return detailed quantities to the unsuccessful parties.

NOTICE TO BUILDERS.

THE ECCLESIASTICAL COMMISSIONERS FOR IRELAND, on or before the 26th day of March, 1866, will receive Proposals for

REPAIRING THE CHURCHES OF

SHANKILL (Lurgan)	Co. Armagh.
KILKEEDY	Co. Clare.
KILRUSH	Co. Clare.
CLIFDEN	Co. Galway.
CLONFERT	"
CREAGH	"
INNISALTHRA	"
KILCONNELL	"
TERLOUGH	Co. Mayo.
BALINAHNCE (Licensed House)	"

According to the Plans and Specifications, to be seen in the hands of the resident Ministers of the Parishes.

The lowest Proposal will not necessarily be accepted.

Each Proposal to be forwarded sealed, prepaid, and addressed thus:—

"Proposal for the Church of
"The Ecclesiastical Commissioners for Ireland, Dublin."

NOTICE TO BUILDERS.

THE ECCLESIASTICAL COMMISSIONERS FOR IRELAND, on or before the 22nd day of March, 1866, will receive Proposals for

BUILDING A ROBIN ROOM AT THE CHURCH OF POWERSCOURT Co. Wicklow.

According to the Plans and Specification, to be seen in the hands of the resident Minister of the Parish.

The lowest Proposal will not necessarily be accepted.

Each Proposal to be forwarded sealed, prepaid, and addressed thus:—

"Proposal for Works at the Church of Powerscourt,
"The Ecclesiastical Commissioners for Ireland, Dublin."

COUNTY OF KILDARE.

TO CONTRACTORS, BUILDERS, &c.

TENDERS will be received at my Office, Naas Court-house, from 10th to 17th March, for the execution of the following works, viz.:

Building an ADDITION to the INFIRMARY, Kildare; sum not to exceed £150.

PIPING the BANK of the RIVER LIFFEY near Newbridge, for a length of 10 perches, and keeping in repair for three years the whole of the Piling between Robert Grady's and Robert Kelly's Bridge, not to exceed £35 first year, £5 each following year.

Plans and Specifications for the above works will be open for public inspection at my Office, Naas Court-house, on and after the 10th day of March next; and Tenders will be opened on the morning of the first day the Grand Jury assemble for fiscal business.

M. YEATS,
Secretary Grand Jury, Co. Kildare.

Naas, Feb. 19th, 1866.

AUCTION OF WOOD GOODS.

JOHN MARTIN AND SON will SELL BY AUCTION, on THURSDAY, the 22nd of MARCH, 1866, at their Timber Stores, NORTH WALL, at One o'clock, the following Parcels of Baltic and North American Timber and Deals, viz.:

170 Tons Quebec Red Pine.
840 " Quebec Yellow Pine.
120 " St. John Pine.
40 " Ash.
55 " Oak (square and flat).
200 " Crown and 1st middling Memol.
300 " Sundswall.
18,500 Pieces St. John Spruce Deals.
12,300 " Lower Port do.
5,000 " Quebec Spruce Deals, 1st, 2nd, and 3rd quality.
29 Fathoms Lathwood, Baltic and American.
16,000 Pine Sawn Laths.

JAFFRAY BARCROFT, Broker and Measurer.

EDUCATION.

MR. WILLIAM B. GILLESPIE

No. 45, BOLTON-STREET.

Has private classes for gentlemen preparing for the College of Surgeons, the Queen's Inns, Apothecaries' Hall, and all Civil Service Examinations. Hours—Morning, from 9 till 5 o'clock; Evening, from 7 till 10 o'clock. A preparatory class for junior pupils. A Prospectus of Terms, &c., to be had at the Academy.

VERNON ESTATE, CLONTARF.

TO BE LET FOR BUILDING, several eligible Sites for TERRACES and DETACHED VILLAS upon the CLONTARF ESTATE, which command extensive views of the Sea and of the Dublin and Wicklow Mountains, and will be let upon Leases for long terms. Application to be made to

THOMAS FRANKS, ESQ.,
21, LOWER FITZWILLIAM-STREET, DUBLIN.

EAGLE IRON WORKS, 158, CHURCH

STREET, DUBLIN. LAURENCE MURPHY, Proprietor. L. M. begs leave to direct the attention of his numerous Patrons and the Public to his large and varied assortment of Ornamental Entrance Gates, and Piers, Field and Haggard Gates, Hurdle Fence, Garden Chairs and Vases; as also Wrought Iron Fire Proof Safes of various sizes to 30 cwt. weight.

BATH STONE OF BEST QUALITY.
RANDELL AND SAUNDERS,
QUARRYMEN AND STONE MERCHANTS, BATH.
 LIST OF PRICES AT THE QUARRIES AND DEPOTS, ALSO COST FOR TRANSIT TO ANY PART OF
 THE UNITED KINGDOM, FURNISHED, ON APPLICATION TO
 BATH STONE OFFICE, CORSHAM, WILTS.

BATH STONE OF BEST QUALITY.
PICTOR & SONS, Quarry Owners and Stone Merchants, Bath.
 Corsham Down, Box Ground, Farleigh Down, and Combe Down Stone.

List of Prices at the Quarries and Depots, also Cost of Transit to all parts of the Kingdom, forwarded on application to the
 BATH FREESTONE WORKS, BOX, WILTS.

THOMAS HENSHAW & CO.,
 WHOLESALE & RETAIL FURNISHING AND BUILDERS' IRONMONGERS,
 AND GENERAL HARDWARE MERCHANTS,
 5, CHRIST CHURCH PLACE, AND 15 AND 16, KENNEDY'S-LANE,

BE^G to call attention to their extensive, varied, and well-selected Stock of Ironmongery in all its different branches. It consists of Parlour, Drawing-room, and Bed-room Grates; Kitchen Ranges, Sash Weights; Iron Rim, Mortise, and Stock Locks; Hinges of all descriptions; Wrought and Cut Nails, O. G. Gutters, Down Pipes and Fittings, Metal Skylights, Ventilating Bricks; Cast-iron Chimney-pieces, with and without Grates; Rabbit Traps, Fox Traps, Galvanized Wire Netting, Sheet and Perforated Zinc, Sink Traps, Furnace Doors and Frames, Hot Air and Plan Stoves, Cast-steel Digging and Manure Forks, Slashing Hooks, Rakes, Spades, Shovels and Hoes.

Manufacturing and General Ironmongers and Tool Warehouse—81, MIDDLE ABBEY-STREET.
 Spade, Shovel, and Tool Works—CLONSKEAGH.

Agents for Perry's Patent Fire-proof Safes quality considered, they are *the* cheapest in the market. Builders are invited to inspect our Stock previous to purchasing, at

5, CHRIST CHURCH PLACE.

KITCHEN RANGES, with high pressure Boilers for Steaming or Bath purposes; Galvanized Iron Roofing, and Fencing Wire, best quality.

WINTER OVERCOATS.

OVERCOATS 20s. The Granville, from Witneys, Beavers, Pilots, &c. A fashionable Overcoat that cannot be obtained elsewhere at the price.

OVERCOATS 25s. The Granville and Prince Alfred Pea Jacket, from various materials.

OVERCOATS 30s. The Albert Frock Overcoat, from Witneys, Naps, and other materials.

OVERCOATS 38s. The newest styles, from Meltons, Witneys, &c., in all the fashionable colors.

OVERCOATS 45s. Made from Balkans, Beavers, Moscows, and the newest Winter Overcoatings.

OVERCOATS 55s. Made from Presidents, Dreadnoughts, Alexandras, and other new materials.

B. HYAM warrants his Overcoats to be THE BEST VALUE, FIT AND MAKE.

B. HYAM,
 30, DAME-STREET, DUBLIN.

MILLARD AND ROBINSON,
 Are unequalled for

PHOTOGRAPHS of Buildings during erection, details of same, and finished Structures.

PHOTOGRAPHS of Plans, Drawings, Sculpture, Models, Carving, &c., for publication, contracted for.

PHOTOGRAPHS of Buildings, Domains, &c., for sale.

PHOTOGRAPHS of Machinery, Designs, and Ornamental Iron Work.

PHOTOGRAPHS of all such carefully and punctually executed by

MILLARD AND ROBINSON,
 THE ROYAL PHOTOGRAPHIC INSTITUTION,
 39, LOWER SACKVILLE-STREET,
 DUBLIN.

UNION PLATE GLASS COMPANY.

The very beautiful article of Plate Glass, manufactured by this company, can be had at the price of the lowest in the market, shipped to any Port in Ireland.

H. SIBTHORPE AND SON, Agents for Ireland,
 11 AND 12, CORK-HILL, DUBLIN.

THE INTERNATIONAL EXHIBITION PRIZE MEDAL, AWARDED 1862; ALSO THE DUBLIN MEDAL, 1865.

ESTABLISHED 1744.

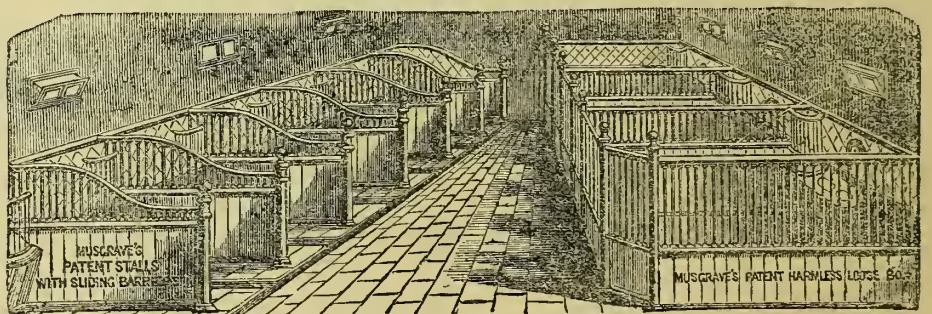
AUSTINS' IMPERIAL PATENT SASH AND BLIND LINES,
 TO BUILDERS, CARPENTERS, UPHOLSTERERS, AND BLIND MAKERS.

J. AUSTIN and SON, Manufacturers of the above articles, particularly wish to direct the attention of the Trade to their
IMPERIAL PATENT FLAX SASH-LINES,

of which they are now making four qualities, and they strongly recommend that in all cases they should be purchased in preference to the PATENT LINE made from Jute, which article has neither the STRENGTH nor the DURABILITY of FLAX, consequently cannot give so much satisfaction to the consumer. They also invite the particular attention of Upholsterers and Blind Makers to their improved Patent Blind Lines, which are very much superior to anything yet offered to the Trade.

They can be obtained of all Ropemakers, Ironmongers, Merchants, Factors, and Wholesale Houses in Town and Country.

This engraving represents the patent Stable Fittings adopted by His Royal Highness the Prince of Wales for the new Stables at Sandringham.



MUSGRAVE'S PATENT STABLE AND HARNESS FITTINGS.
MUSGRAVE'S PATENT HARMLESS LOOSE BOXES.
MUSGRAVE'S PATENT IRON COW STALLS & PIGGERIES.

Gentlemen who cannot inspect these fittings are requested to write for engravings, as they are unlike those of any other maker, and were admitted to excel all the work of their class in the Exhibition.

They can be seen in first-class stables in almost every county in England; and MUSGRAVE, BROTHERS, are now fitting several very large establishments under direction of London architects, noted for employing only what is the best of its kind.

MUSGRAVE, BROTHERS, are the only Irish firm in their department of manufactures who received the Prize Medal of the International Exhibition and of the Royal Agricultural Society of England; and the acknowledged excellence of their productions has given to their House a speciality and importance not possessed by any other, and caused them to be resorted to from England and Scotland by Architects and others who have learnt their ability to execute really reliable Work on moderate terms.

FOR PARTICULARS ADDRESS—

MUSGRAVE, BROTHERS, Ann-street Iron Works, Belfast.

FRANCIS CAVANAGH,
 HOUSE PAINTER AND DECORATOR, AND GENERAL CONTRACTOR,
 Importer of English and French Paper Hangings, and Decorations,
 77, MARLBOROUGH-STREET, DUBLIN.

The Dublin Builder.

VOL. VIII.—No. 150.

THE FASHION OF BENEVOLENCE.

TRITEST, truest, shallowest, least sufficing among aphorisms of every day; *one half the world knows not how the other half lives.* Not a tenth of this same self-

interested world knows anything of the other nine-tenths, scarcely one in a hundred cares to know how and where his ninety-nine fellows live. Still a pursuit of inquiry into contemporary humanity is one of the recognised branches of anthropological science, and a care for the wants and uncivilized state of fellow-creatures least known, has its due share of regard from the benevolent and Christian-hearted. With both classes of enquirers however, scientific and charitable, and especially with the latter, fashion reigns supreme. Crumbs in our day and generation are not permitted to fall from the table of Dives, but with the 'machinery' of modern societies are rather distributed under improved regulations of 'systematic benevolence,' and as for the recipients, it may be truly said of them that "every dog has his day," and every 'systematic' Dives has his pet dog. "Evangelization and civilization of the colored races!" cries Exeter Hall; "Moral pocket handkerchiefs and flannel waistcoats for infant negroes," responds the somewhat unjust scoffer who passes by. "Female Missions to the East," says another well-meaning section of the community; "Garters for the harem of the grand Vizier! crinolines for Upper Nubia! and a general reformation of the indelicate apparel of the Indian gnaut girl!" sneers the unsentimental cynic. "Look at home first." This is flippant and unfair. Let us have more earnest community of feeling on such subjects and more catholic discrimination in our charity will follow. To all those to whom, as perhaps to us, the pursuit of one class of study has given a bias, the latest course which this fashion of charity has taken must afford the keenest satisfaction, more especially as we know the English and Irish heart is too good and too great to permit on this account the tide of benevolence to ebb from any worthy shore which it has yet touched. The few earnest and persevering labourers who have taken their stand by the wretched lanes and alleys of our great cities and cried unceasingly to their fellow-philanthropist to withdraw for a little his far off-gaze from Borioboola-Gha and turn it for a little to the kingdom of misery and wickedness at his own door, have begun to make themselves heard. We have at length lived to see the mysteries of our own slums, the conditions of life and habitat of that unstudied animal, the British outcast, a subject of sentimental curiosity. A daring explorer pushes his way into the strange unknown country as far as private brougham and liveried charioteer can penetrate, thence plunges bravely among the savages known as "casuals," comes back and tells his story, and is the lion of the hour. This is in a great measure the morbid and sensational side of the movement, but it indicates a healthy excitement of public feeling in a

good direction, and there is some work on foot more practical and substantial in its results than this. Practical benevolence has set itself to discover how from the chaos of poverty revealed to it, it can fish up the honest poor from among the vicious, and cast their lines in pleasanter places. Next it has been discovered that in many points of view this is a profitable investment politico-economically speaking. State-burdens are diminished, and the manufacturer gains from the regenerated class, at a higher rate of wages, more valuable and money-producing servants than he used to do from their underpaid predecessors. But the grandest and, strange to say, the most novel of discoveries which modern charity has made is that the best of all charity is not eleemosynary. Our fathers built almshouses—so shall we, we hope—but let our boast be that we first have built improved dwellings for the poor. Improved dwellings! what does the phrase mean? If the reader would learn let him take, as we have recently done, a day's stroll through the purlicus of the liberties of Dublin; let him look into back yards, peep into cellars, take notes of the sounds and sights and smells which he will encounter—it will not be necessary for him to intrude questions on the wretched occupants—and he will have seen enough both to make his heart ache, and teach him what the force of the phrase 'improved dwellings for the poor' may be.

We look on the munificent gift of Mr. Peabody to the poor of London, as it is being wisely expended, as the greatest event in the history of modern charity; not on account of its magnitude—though £250,000 is no trifle—but with reference to the more indirect good it will accomplish, in fact is accomplishing at present by force of example. The first report of the trustees of the Peabody Charity (since, by the way, reproduced verbatim as an original article in the *Illustrated London News*) is a document to cheer the heart of any enthusiast in the cause. So interesting do we esteem it that we wish we could transfer it all to our pages.

At the very outset of this movement we discover a most reassuring fact for its success, namely that our charity in the matter is no charity at all in one sense, and that in fact the erection of these buildings is a tolerably good speculation. We have before us the statement of a gentleman, an architect who has devoted much time to the study of the question, Mr. Charles Geoghegan, that investments in this way in the city of Dublin will command a return varying from 5 to 14 per cent.; in some cases possibly more. The rents in houses let to the poorest classes are invariably found to be paid with a punctuality and regularity that is almost incredible; so much so that losses through defaulting tenants may be practically set down as nil.

We hear with sincere pleasure that some steps have been taken already in the city. Some of our more wealthy citizens have led the way on their own account, and a joint-stock company is talked of. Once respectable people have learned that property set in healthy tenements is something of which to be proud, not ashamed as heretofore, we look to see the gradual extinction of the whole race of house-jobbers as they are at present. A diminished poor-rate, and death-rate too, epidemic disease lessened, our duty done

to our poorer brother, and our money profitably invested in far more senses than one; what more could the heart of man desire? Shall we be content now to cheat ourselves and our consciences with that "God help the poor," with the utterance of which we too often appear to satisfy ourselves when misery and wretchedness happens on some rare occasion—for they are not intrusive—to come before us. There is no improvement which will be chronicled from time to time in these pages with such genuine pleasure, no cause to the furtherance of which we would so desire to devote ourselves heart and soul, and to which the DUBLIN BUILDER will ever so willingly lend its columns, as to this movement to give a decent home to the industrious poor.

OUR CORRESPONDENTS AND NOTES OF NEW WORKS.

WE take the opportunity of replying to some observations addressed to us by Mr. Duncan Ferguson, architect, to make some remarks for general application on the subject of correspondence with the editor. In forwarding some particulars of the proposed Presbyterian Church, at Naas, Mr. Ferguson says:

"I forward a few particulars relative to the building of the Presbyterian church at Naas with great pleasure at your request, although it is a work of very humble pretensions in architectural display when compared with many other works carried out by me in the vicinity of the city of Dublin within these last few years, all of which were executed by eminent builders holding the highest position in the trade, but strange to say these various works were never heard of through the medium of the DUBLIN BUILDER, or any other publication that I am aware of in the city of Dublin. As an example, I refer to Knockmaroon Lodge, the residence of Gilbert Burns, Esq., not four miles distant from the city; a mansion worthy of note, possessing all that is magnificent, handsomely enriched with every costly material in modern use, and carried out in the most satisfactory manner by Messrs. Cockburn and Sons, Brunswick-street. This mansion, together with the conservatories, gate lodge, gas house, gardener's house, terraces, &c., cost over £10,000. These works occupied at least three years in building, yet I never observed a single word about them in the DUBLIN BUILDER. Again, I will refer to another well-known work still nearer to Dublin; that is the villa residence of George Mitchell, Esq., Rathgar-road, equally beautiful and costly for its size, built by Mr. Millard, Harcourt-street, another of our favourite contractors, and although built in a most conspicuous place, was never observed by the DUBLIN BUILDER. I might easily refer to other works carried out under my superintendence utterly unknown or recognised, whilst miserable cottages and petty works of comparatively trifling cost are observed and brought forward before public notice."

We must again urge on all our subscribers and contributors, what we would have supposed might have suggested itself to Mr. Ferguson's mind, the fact of our comparative dependence for information as to new works on the supply of notes forwarded to us by architects and builders, and other obliging correspondents. Practically speaking, the difficulties in the way of obtaining any information of real value about works contemplated, in progress or completed, without the friendly connivance of architect and builder, are insuperable. Let us imagine a case of frequent occurrence. A building of some peculiar interest is to be described or noticed. The practice of the DUBLIN BUILDER invariably in such a case is to place the inspection in the hands of a thoroughly competent person, and the only person thoroughly competent for such a task must be an architect of some standing in his profession, and of the very widest possible experience. A gentleman with the ordinary attainments

of one of the reporting staff of an ordinary newspaper is quite useless for such a purpose. Now we have always found that this experienced and discriminating contributor who is so desirable, can only be found among architects engaged most busily in practice—a natural result of their competency for their business—to whom time is a matter of very serious importance. Our contributor, we will suppose, goes to this building of peculiar interest and possibly finds a regulation in force at the wicket gate—a very proper one it may be—that there is no admittance for strangers to the works without an order from the contractor or architect, on any pretence whatever. In the great majority of cases, however, a statement of the object of the visit is an “open sesame”—for all good workmen like their good work looked at—but even then the result is far from satisfactory. No plans of the building, as it is to be, on the ground for reference, no foreman or clerk of works able or willing to supply the hundred and one minor items of information which no mere inspection will discover. Take another case: the most favorable time no doubt for visiting a work to describe it is near or after its completion. In very many cases, both public and private, the occupants of new buildings enter on possession of a portion before the whole is completed; in very few others is any time allowed to elapse between the completion and occupation. Our visitor finds in some cases that he is not a very welcome intruder, and in others natural good taste prevents that interruption of privacy which would be essential to his purpose. How then are we to obtain the great mass of our detailed information if we are not put in possession of it by the architect or builder in each case? On receiving the most meagre descriptive particulars as to proposed cost, builders’ and architects’ names, dimensions and number of apartments and so forth, facts which we are utterly unable to evolve from our own inner consciousness, we generally manage to have an inspection made, if not previously noticed by our visitor who supplements the facts by his own description. Again we cannot always be sure that an owner or architect of a new building may exactly wish to see an account of it published, a point which has especial weight with us. From this it will be seen that it is utterly impossible for us to be proper historians of the progress of building unless we are continually *en rapport* with the architects and builders. If then omission be made of the notice of any important work we must say the fault rests with either of the two last named gentlemen, and not with us. Our correspondent whom we quote above will, we have little doubt, see the common sense of this. Another reason which has operated in his case in particular is that, so far as we know, he is not a member of the Institute of Architects, and not therefore generally to be found where architects do congregate, and where *viva voce* contributions are thankfully received.

With the very best intentions in the world, we must repeat that we are sadly incompetent to fulfil the requirements of this department of the DUBLIN BUILDER without more efficient aid from our friends. After this lecture, however, we trust we shall experience a vast improvement. We beg of all to whom these presents may come to send us *monthly notes* of the works on which they are engaged. We must only add that our endeavour shall be as

heretofore to eliminate from all mere notes of new works, superfluous pieces of laudation or censure, and confine the description to statements of *facts*. In other places in the journal it will always be our desire to praise or blame as need be, honestly and independently, without malice or without favour. We would be glad if our correspondents would bear the distinction in mind in forwarding notes of new works.

THE BELFAST ALBERT MEMORIAL COMPETITION AGAIN.

FREQUENTLY as we have predicted the disappearance of this subject from our pages, we appear as far from that happy state of affairs as ever. A letter has been addressed to us by one of the premiated competitors—only nominally so it would appear—and we confess on reading it we felt some reluctance in publishing it, involving as it does charges of the very gravest character. Looking however to the character of our subscriber, by whose name it is authenticated, and to the simple justice of the case, we feel that there would be no course open to us but to give it insertion.

On the first of Mr. Linklater’s charges—that the committee have failed to keep faith in the matter of simple payment of the premiums—comment is needless. Without taking into consideration other complications likely to arise, Mr. Linklater is clearly entitled to the second premium, Messrs. Lanyon, Lynn, and Lanyon having with a proper sense of their own dignity withdrawn from the contest. We would say in such a case our correspondent’s forbearance is utterly thrown away, and a communication on the subject to his solicitor would be a more practical step than having recourse to the columns of a newspaper.

As to the second and graver charge made as to the cooking of the estimates, we withhold all comment for the present, as it is improbable that such a statement could remain unreplicated to, and we should be sorry to express an opinion without hearing what those on the other side have to say for themselves. We may only add that we can scarcely credit the possibility of such a transaction as our correspondent describes, but if his statement can be borne out by facts, the Belfast Albert Memorial case may take a high place in the annals of competition jobbing. Of this, however, let our correspondent rest assured that there is no possibility of his statement being unregarded. We observe among the names of the committee, gentlemen whose honorable character raises them above all suspicion of being willing abettors of a job of any description, and who for their own sakes would not permit such a grave charge as this remain unquestioned.

THE ROYAL IRISH ACADEMY.

A GENERAL meeting of this body was held on Monday evening, 26th ult. The chair was taken by the Very Rev. DEAN GRAVES.

Mr. William Hennessy read a paper “On the Antiquity of the Curragh of Kildare as a Common and Racecourse.”

Mr. Kelly, in moving that it be referred to council for publication, said he believed the author of it, promised to be a bright ornament of the School of Archaeology, which had been raised up by their lamented friend Dr. Petrie.

Mr. Eugene A. Conwell read a paper “On the Examination of the Ancient Sepulchral Cairns on the Longberew Hills, County of Meath.”

The Rev. Dr. Haughton, F.T.C., laid before the Academy, without reading it (in order to afford time for remaining proceedings of the evening), the second part of a paper “On the Semidiurnal Tides of the Coasts of Ireland.”

Dr. Haughton then gave a brief account of a remarkable meteoric stone which fell at Dundrum on the 12th of August last. It was found by a man named John Johnston, a tenant of Lord Hawarden, to whom the finder presented it shortly after it fell. Lord Hawarden was about sending it to the British Museum, but he had succeeded in keeping it in this miserable provincial locality. The finder of the stone, Johnston, had been forwarded from Tipperary with a return ticket to see the Exhibition, and he had taken down from his lips an exact statement of the circumstances connected with the finding. He said that he was standing in his garden with some friends when he heard a noise like a shot from a cannon; but he said nothing about a flash of fire, which usually accompanied those occurrences. Then followed a buzzing sound, and on looking up he saw an object falling in a slanting direction. It fell at about forty yards’ distance from him, and after some searching they found it about a foot deep in a potato drill. It was milk warm, but not warm enough to burn his hand. A novel feature in this stone, which was in form a triangular pyramid, was, that it had three defined lines running from the top as if drawn by a rule. The British Museum had offered to buy this stone, but he had told them that they could not get it. An application then came from the “Head Centre” of learning for a specimen of it, but he wrote back to say that anyone who wanted to see the stone would have to come over to Dublin for that purpose.

The President then made a communication of an elaborate character on the articles found in the cairns by Mr. Conwell. A number of very elegant drawings of the stones found in the cairns were exhibited by Mr. Du Noyer.

The Rev. Dr. Reeves, in moving a vote of thanks to Mr. Naper, and his agent, Mr. Hamilton, for their aid in procuring the collection for the Academy, said that Mr. Naper had shown an example of liberality which well deserved to be followed.

The Rev. Dr. Reeves presented from Sir R. J. Murchison, Bart., on behalf of her Majesty’s Government, copies of horizontal sheets of sections 19 and 20 of Geological Survey of Ireland; and from the Registrar of the College of Physicians a copy of the registry of the King and Queen’s College of Physicians.

STAINED GLASS.

A STAINED glass window has been recently placed in St. Ann’s Church, Dawson-street. It is one of the windows on the north side, and consists of one large light or opening. The subject chosen is the Tribute Money. Our Lord is represented surrounded by the Pharisees asking Him “Is it lawful to give tribute to Cæsar or not?” The figures are well and boldly grouped, exceedingly rich in color, and elaborate in drawing and detail. In the background is the City and Temple of Jerusalem. The whole is surrounded by an appropriate border of flowers and foliage, amongst which is interwoven the text “Render unto Cæsar the things that are Cæsar’s, and to God the things that are God’s.” The window is a memorial one, and an inscription at the base records: “In pious memory of Thomas Kemmis, born 1752, died 1823; and of his son William Kemmis, born 1777, died 1864. Both resident in this parish from 1787.”

This work of art was executed by Messrs. Earley and Powells, 1, Upper Camden-street, Dublin.

MALICIOUS INJURY TO KENMARE CHURCH.

THE Grand Jury of the County Kerry have passed a presentment for £47 for damage done to Kenmare Church by the malicious breaking of eighteen panes of cathedral glass in the windows on the 4th ult. Inside the church were found, on the morning after the occurrence, a great heap of stones which seemed to be limestone of same kind as that in a neighbouring quarry. The stained glass windows had been wired on the outside, but the guards were bent by the stones, and the glass broken. There were no guards on the other windows.

The officials and workmen in the employ of Messrs. Crowe and Sons, builders, Great Brunswick-street, have presented Mr. W. R. Roberts with a handsome writing-desk, suitably inscribed, as a token of the good-will and esteem which he secured for himself by his high principle and integrity while engaged by the above-named firm. We learn that he has been appointed to the post of manager to a slate quarry, a post which we feel certain he will fill satisfactorily.

THE DISTRIBUTION OF GRANITE IN IRELAND.*

I HAVE selected "The Distribution of Granite in Ireland" as the subject for consideration this evening, not because of its superior importance as a building material in this country, but rather as forming, from its position in the geological scale, a fitting introduction to the practical study of a science which has most important bearings on architectural education.

Mr. J. H. Owen, in his address to the Class at the commencement of the session, placed Geology amongst sciences a knowledge of which was essential to the architect, and a very slight consideration of the subject must convince you how much the selection of building materials, and the operations of well-sinking, and the quarrying of stone depend upon an intelligent understanding of certain facts which this science professes to teach. Perhaps Geology, of all the sciences, has of late years engaged most of the popular attention, due, no doubt, in a great measure, to the religious element which has been imported into the controversy respecting its deductions, an element which fortunately has no place in its relations to us, and which some of the ablest geologists have wisely abstained, in the present state of the science, from pronouncing on.

While the discussions to which I have referred have done much to turn the attention of the many to the leading facts of the case, I greatly fear they have diverted no small number from that patient and earnest study of practical details which can alone make a knowledge of the science really useful, and these are consequently here, as in everything else, mastered only by the few. You will permit me then to impress upon such of you as may have as yet given but little consideration to the matter, the great necessity for being as thorough as possible in this as in your other studies. The meetings of this class are intended to be mutually improving, and in our discussions this should be regarded as the main point—not so much the manner of the address, written or spoken, (although surely progress must be made here also) as its matter, its practical tendencies and thorough earnestness.

I am quite aware of the conflict between the practical and the theoretical in the world; how often unbecoming jealousies appear where these should go hand in hand; how what is very fine in the laboratory not unfrequently turns out of little use when severer tests are applied at the hands of the "practical man;" but has he gained nothing by the man of theory and thought? In the early practice of the profession how much architect and artizan learn from each other? I know too that such a thorough knowledge of Geology as I am recommending seems to involve an amount of study utterly impossible to allot to one branch of a necessarily extended curriculum; and that, moreover, the so-called sciences are so closely allied that there is no apparent end to the ramifications of the subject, even at the outset. To explain: take, for instance, the substance we are about to consider—Granite; we are told it consists of quartz, feldspar, and mica—substances which lead you first into *mineralogy* to distinguish the form of their crystals, and then into *chemistry*, to understand their constitution; and further on, when we come to speak of the stratified rocks, we have zoology and its classifications and controversies, and even some very nice points in anatomy and physiology to deal with. All this is very true, and seems disheartening at first sight, but thanks to our friends of the laboratory and the dissecting-room, our path has been made very nearly a "royal road;" and even should we refuse to accept their dicta unquestioned, we find that by commencing early in life to prepare for the practice of the profession, this very intertwining of the sciences renders their acquirement all the easier by making progress in one progress in all; as an apparently formidable nomenclature makes description more concise, while rendering the facts described largely independent of the diversities of language; in fine, a much smaller amount of time employed and of technical knowledge acquired than at first appears likely, fits us to become intelligent observers and ever improving students in this as in the other sciences which lend their aid to "architectural study."

The origin of the name "Granite" has been itself subject for discussion. It is usually asserted to have originated in a corruption of the Latin word *granites* used by Pliny, and until within the last 50 years, when Geology began to rank as a science, it was often applied to every granular stone used in architecture or sculpture. As regards its general appearance: in such a city as Dublin, where we daily gaze on it in our public buildings, and walk on it in our pavements, it is sufficiently familiar, and any one who visits the Industrial Museum, in Stephen's-green, can, at a glance, assure himself of the great diversity in texture and color which it presents, while retaining almost the same constituents; mainly, as every one now knows, and as has been already stated, it consists of three minerals—feldspar, mica, and quartz; that these are aggregated as crystals, and that these

crystals are sometimes very small, making a fine grained stone, and sometimes very large, making an equally coarse one; to the color of these crystals, and notably to that of the feldspar, its changes of hue are due; while both its appearance, durability, and ease of working are effected by the proportion of these crystals to each other. We will now consider them in detail:—1st. *Feldspar*. This is sometimes a constituent of granite as orthoclase or potash feldspar when it is flesh-coloured or white; sometimes as albite or soda feldspar, generally dead white. There are other varieties of feldspar which I need not detail; the two I have mentioned mark their differences by their names. Feldspar is never less than a third of the mass—most frequently a half—often still more; chemically it may be regarded as consisting of soda, silica, and alumina (as albite), or potash, silica, and alumina (as orthoclase). 2nd. *Mica*—whose bright scales are so easily recognized in many granites. It is sometimes black, sometimes dark coppery brown, green, golden yellow, or silvery white; it contains the constituents of feldspar, with the addition often of either iron and lime, or magnesia, or all three. 3rd. *Quartz*. This you will also easily recognise; it is generally colorless or white, but sometimes dark grey or brown, and always translucent; it is the purely silicious element; its crystals, which are six-sided, are never perfectly formed in granite.

There is another constituent of granite of which I have not yet spoken, but which may as well be at once placed on the list, namely:—4th. *Hornblende*. This frequently takes the place of mica, and then granite bears the name of *seyenite*, from *Syene* in Egypt, in which country it was largely used as a building stone. It may be chemically described as containing six equivalents of silica to five of base; this base being a variable mixture of magnesia and lime and the protoxides of iron and manganese. I shall have occasion to mention instances where Irish granites assume this appearance. As regards the general chemical composition of granite, the following tables placed side by side will be interesting. The analysis of Professor Haughton is the mean of specimens of granite from our great south-eastern range, and it, with that of Durocher, I have taken from the valuable manual of Professor Jukes, the local director of our Geological Survey,—a text-book of great importance to the geological student in this country:—

Professor Haughton			Durocher		
Silica	...	72.07	Silica	...	72.8
Alumina	...	14.81	Alumina	...	15.3
Peroxide of			Potash	...	6.4
Iron	...	2.22	Soda	...	1.1
Potash	...	5.11	Lime	...	0.7
Soda	...	2.27	Magnesia	...	0.9
Lime	...	1.63	Oxides of Iron and		
			Manganese		1.7
			Loss by ignition		0.8
		100.00			100.00

Professor Haughton seems to think that in Ireland the oxides of iron replace alumina, and that the soda and lime replace the potash—the iron is nearly as great, the soda and lime being more. He supposes that by this change the durability of the Irish granite is injuriously affected. He considers the granite examined by him to consist roundly of four minerals, orthoclase (potash feldspar), two kinds of mica and quartz embedded in a feldspathic paste. Let me here remind you of two facts, the first of which the appearance of granite abundantly confirms. 1st. That it is an igneous rock, the aggregation and form of its constituents being due to the influence of heat; in other words, that its crystals were developed in an unequally cooling fluid. 2nd. That in all geological classifications it is placed first in the ascending series, and is in truth the typical igneous and bottom rock.

I have said that a substance known as hornblende often forms a constituent of granite when it becomes *seyenite*, and I have already given you its chemical composition. There is yet another form of granite to which I will have to refer, namely, *Gneiss*. This substance is constantly associated with granite, and consists of the same minerals as granite, arranged with a degree of parallelism; it is an altered granite, and like feldstone (orthoclase, potash feldspar and quartz) and greenstone (albite, soda, feldspar, and hornblende), must be deferred for future consideration. I mention it now as many of the Irish granites partake of this gneissose character.

I have placed on the wall a reduced copy of Sir R. Griffith's Geological Map of Ireland, published for the use of the General Valuation Department, the colourings of which, with your knowledge of the country, will enable you to follow me in a description of our principal granitic districts, for which I am indebted to the work of our vice-president, Mr. Wilkinson, on the "Practical Geology and Ancient Architecture of Ireland," a book which, as it views the geological question from an architectural point of view, is of much interest to us.

The most extensive granite district of Ireland passes from Dublin through the counties of Wicklow and Carlow into Kilkenny. It occurs also on the south-eastern coast of Down and around the town

* Notes of Lecture to the Class for Architectural Study, Royal Institute of the Architects of Ireland, by C. H. Brien, Student, Assistant Secretary.

of Newry; the Mourne mountains consisting of granite. In smaller quantities, and as isolated protrusions, it is met with in the counties of Londonderry, Tyrone, and Cavan; it is rather extensive and gneissose in the west of Donegal, and is found west of the town of Galway.

The Dublin granite, near Kingstown, is known to us all; it is very hard, from the abundance of quartz, and its suitability for heavy works is admirably displayed in the harbour; and the buildings of the metropolis present us with good specimens of the finer kinds from Ballyknocken or Golden-hill, in the Wicklow portion of the range, where the proportion of feldspar to quartz is greater: both granites are grey; the Kingstown granite being, at the same time, the most difficult to work and most durable. The granite in the Carlow portion of the range is stated to resemble the finer granites. That of Newry is fine and dark in colour, and is capable of being worked into fine mouldings. The Galway granite has crystals of flesh-coloured feldspar, and is represented as possessing considerable variety of tint, and consequently affording a suitable material for ornamental work. In Mayo the gneissose character is apparent, and its capabilities for building purposes of course diminished. The granite of Donegal is not much used. In Tyrone we have a reddish tinge and the metamorphic effects. In Cavan the granite is similar to that of Down, and in Kilkenny and Wexford it shews its relation to the range of which it apparently forms a portion.

Mr. Wilkinson's book also contains valuable tables giving the results of experiments made by him with a view to test the strength, &c., of Irish building stones, to which, I hope, at a future time, to call your attention; for my present purpose I have compiled from thence the following, which gives the general mineral character of specimens of granite obtained from some of the best-known quarries, arranged according to the counties in which they are situated:—

County	Quarry	Mineral character
Carlow	Ballybeg, near Carlow	Feldspathic and micaceous, some specimens discoloured by iron.
"	Kilcurragh, near Baginabstown	Feldspar white and opaque, mica grey; the stone nearly white, and loosely aggregated
Cavan	Crossdoney	Syenitic granite; close and rather fine; quartzose.
Down	Quarry near town of Newry	Grey syenitic granite, with schorl and black mica, quartz, and feldspar white.
Dublin	Golden-hill	Very largely crystalline; mica brownish green; quartz and feldspar about equal.
"	Killiney	Very feldspathic; feldspar greyish white; mica both black and green.
"	Kingstown	Grey colour; with grey and black mica; quartz sometimes grey.
Galway	Taylor's Hill, near Galway	Feldspathic; feldspar red and greenish, with dark green mica and grey quartz; highly crystalline.
Wicklow	Ballyknocken	Greyish white quartz and feldspar, with black mica, coarse and loosely aggregated
"	Golden Hills, near Blesinton	Quartzose and feldspathic, coarse and slightly discoloured.
Tyrone	Limehill, near Pomeroy	Feldspar red and abundant; talcose green mica; grey quartz; calcareous portions associated; a quartzose and feldspathic protogene.

In Mr. Wilkinson's table he notes the result of his examination of more than one specimen from the same quarry, but the foregoing will give you an idea of the diversity which is found to prevail.

We hear much in the present day of the advisability of suiting elevation to plan, and not sacrificing plan to elevation in the designing of our buildings. Mr. Wilkinson pleads for an extension of this principle, namely, that of designing, so as to suit the localities in which they are to be placed, and the materials which that locality

affords. This he shews to have been the practice in the erection of the most ancient buildings of this country, and here our geological knowledge would come to our aid. The maps publishing by our Geological Survey, by counties, with their accompanying pamphlets, will, when complete, place us in a position as to local knowledge on this point which cannot be over-rated, and in the meantime such works as those of Professor Jukes and Mr. Wilkinson, with the large Geological Map of Ireland, by Sir R. Griffith, cannot be too strongly commended to your study. I have no intention of speaking against imported materials; we must all be proud of the progress which our city shews in the carving of a description of stone for which this country furnishes no substitute, still native materials *generally*, and the use of native marbles *especially*, claim much at our hands, and the making the most of local building stones is a problem well worthy of your efforts at solution.

It may be of interest, in considering granite as a building material, to mention some buildings in this country of ancient and comparatively modern times in which, in whole or part, it has been used, and, with that view, I will select the round towers, and some of the principal buildings of the metropolis; and here I must be again indebted to Mr. Wilkinson. These tables will be of use in enabling you to judge of the relative durability of the material used (where Mr. Wilkinson has been enabled to state the locality from which the granite has been obtained), and with them I will close the consideration of this question for the present. Amongst the round towers may be mentioned the following:—

Clondalkin	Dublin	Granite stones round the doorway; the common walling of calp.
Castledermot	Kildare	Granite field stones, with spawls of limestone between the joints.
Kildare	Kildare	Doorway of granite, wall of slate rock of the locality.
Seven Churches	Wicklow	Slate stone rubble work, some few granite stones being used; semi-circular door-head of one large stone of granite.

Amongst the metropolitan buildings—

The Bank of Ireland	Flanking walls of granite; columns, &c., of Portland stone
Trinity College	New buildings of granite from Co. Wicklow; library faced with granite from County Wicklow.
Post-office	Granite from Counties of Dublin and Wicklow; portico, &c., Portland stone.
Rotundo Buildings	Granite from Wicklow; some from Kilgobbin, Co. Dublin, in good preservation.
Four Courts	Mass of buildings from Kilbride and Golden Hills, Co. Wicklow; in screen wall Co. Dublin used, which has had to be renewed; portico, &c., &c., Portland stone.
Custom House	Granite; principal front, &c., &c., Portland stone.
The Castle	Entrance gateways, &c., granite.
Nelson's Pillar	Granite from Glencullen, Kilgobbin, &c., Co. Dublin.
Wellington Testimonial	Faced with granite from the above quarries.
St. Patrick's Cathedral	The spire is of granite; some of the old dressings were of granite, which was much decayed.
St. George's Church	Walls faced with granite from Co. Dublin.
St. Paul's Church	Granite from Glencullen, Co. Dublin.
St. Werburgh's Church	The columns, &c., were of granite, which was much decayed (the front has since been colored).
St. Thomas's Church	Granite; Portland stone columns, &c.
R. C. Cathedral, Marlborough-street	Faced with granite from Co. Dublin.
R. C. Church of St. Francis Xavier	Ionic portico, entablature, pediment, &c., &c., of granite from Ballyknocken, Co. Wicklow.
St. Paul's R. C. Church, Arran-quay	Ionic portico, pediment, tower, &c., of granite, from above quarry.

To this list may be added, our railway termini; the new buildings, Royal Dublin Society; the Wesleyan Chapel, Stephen's-green; and many other recent examples which will, no doubt, occur to you.

THE PEABODY GIFT.

THE trustees of this fund have issued a lengthened report, with statement of accounts up to December last. A few extracts from it on the more important features in the disbursement of this noble gift may be of interest to our readers:—

The proceedings of the trustees, to whom Mr. Peabody committed the charge of his munificent "Donation of £150,000 for the Benefit of the Poor of London," and the course which they have adopted for its application, conformably with the recorded intentions of the donor, will be best understood by recalling the terms in which his wishes were originally conveyed.

In his letter of the 12th of March, 1862, addressed to the United States minister, Lord Stanley, M. P., Sir J. Emerson Tennent, Mr. C. M. Lampson, and Mr. J. S. Morgan, Mr. Peabody, after alluding to the sums which he had previously bestowed in America—at Danvers, the place of his birth, and at Baltimore, the first scene of his active life—for the foundation of institutions calculated to promote the intellectual, moral, and social welfare of his fellow-countrymen, proceeds to say that, in pursuance of a long-cherished determination to attest,

by a similar gift, his gratitude and attachment to the people of London, among whom he had spent the last twenty-five years of his life, he was then about to devote £150,000 "to ameliorate the condition of the poor and needy of this great metropolis, and to promote their comfort and happiness." This sum he hoped would be so applied by the trustees that the result would "be appreciated, not only by the present, but by future generations of the people of London." As regards its expenditure, Mr. Peabody had but three conditions to impose; but these were, as he said, "fundamental principles, from which it was his solemn injunction that those entrusted with the application of the fund shall never, under any circumstances, depart."

"First and foremost among them is the limitation of its uses absolutely and exclusively to such purposes as may be calculated directly to ameliorate the condition and augment the comforts of the poor, who either by birth or established residence form a recognised portion of the population of London."

"Secondly, 'it is my intention,' he said, 'that now and for all time there shall be a rigid exclusion from the management of this fund of any influences calculated to impart to it a character either sectarian as regards religion, or exclusive in relation to local or party politics.'

"Thirdly, it is my wish that the sole qualification for a participation in the benefits of the fund shall be an ascertained and continued condition of life, such as brings the individual within the description (in the ordinary sense of the word) of the poor of London, combined with moral character and good conduct as a member of society."

Assuring to the trustees the utmost latitude for the exercise of their judgment in deciding on the mode of expenditure, Mr. Peabody, without, in the remotest degree, desiring to limit their discretion in the selection of the most suitable means for giving effect to his purposes, threw out one suggestion for consideration, among the many which would necessarily come under their attention, viz., whether it might not be found conducive to the realization of the conditions above stated, "to apply the fund or a portion of it in the construction of such improved dwellings for the poor as may combine, in the utmost possible degree, the essentials of healthfulness, comfort, social enjoyment, and economy."

Thus generously endowed alike with funds, and with discretion to choose the mode of their employment, the first care of the trustees was to obtain a deed so framed as to confer legal powers on those who were to be entrusted with their administration,

and to ensure their undeviating application to the generous objects contemplated by the giver. . . .

Public attention throughout the United Kingdom having been attracted by the largeness of Mr. Peabody's bounty, communications were received from numerous quarters suggesting benevolent plans for adoption. Many of these were in themselves highly desirable, but the majority involved arrangements more or less at variance with Mr. Peabody's injunctions and the provisions of the deed of trust. For example, institutions connected with religious bodies were expressly excluded, and educational establishments, as ordinarily organized, were open to the same objection, inasmuch as they are more or less dependant for their success upon denominational favour.

Hospitals, both for acute and chronic disease, presented strong claims; but on one, among other grounds, their consideration, was deferred. Mr. Peabody, in his communication to the trustees, had not specially directed that the fund should be so employed as to render it reproductive; but that passage in his letter in which he expressed his hope "that not the present only, but future generations of the people of London" would appreciate its advantages, was felt to be entitled to the widest construction of which it was susceptible; and it appears to point to a mode of investment, such as, while administering to the immediate enjoyments of the labouring poor of London, would also bear within itself the germ of future extension and perpetuity. This result did not seem to be attainable in the case of hospitals, which would absorb without returning any portion of the fund. The same remark applies to alms-houses and dwellings for the reception and support of the absolutely destitute, whose subsistence would necessarily be a perpetual charge without presenting the slightest element of self-support; and attention was thus forcibly directed to the object dictated by Mr. Peabody himself, of erecting dwellings for the labouring poor on such improved principles as to conduce at once to economy, salubrity, and social enjoyment. This mode of employing the fund had also the recommendation that the low rents at which this healthful accommodation could be given would annually supplement the original fund, and thus create a source whence similar advantages might continue to be derived for an almost indefinite period.

Nothing is more calculated to cherish and develop those feelings than the removal of the individual and his family from the squalor and discomfort of a dilapidated and unwholesome home to a dwelling cheerful with light and air, and replete with facilities for cleanliness, health, and every domestic operation; and all this at a cost somewhat less than he had been accustomed to pay for the filth and malaria of the foetid alleys he had left. It was under a strong conviction of the paramount importance of this object, and more especially under the peculiar circumstances above adverted to, that the trustees came to the resolution, "without precluding the consideration of other objects hereafter, to confine their operations for the present to the object specially recommended to their notice by Mr. Peabody, viz., the improvement of dwellings for the poor of the metropolis."

Enabled by this decision to proceed promptly with the business of the trust, the next inquiries of the trustees were directed to the system and style of buildings most conducive to the objects in view; and to the acquisition of sites in districts of the city most suitable for their erection; these sites to be distributed throughout the various quarters of London, in order to diffuse the benefits of Mr. Peabody's gift over the largest possible area.

The first site chosen was in Commercial-street, Spitalfields, near the terminus of the Eastern Counties Railway, where a space equal to 13,682 square feet was obtained from the Commissioners of Public Works for £3,300. For a further expenditure, something under £24,000 for building, accommodation was obtained for upwards of 200 persons, in tenements of one, two, or three apartments each, according to the requirements of the several occupants. The latter sum included also the cost of erecting nine shops on the ground floor, the rents of which, amounting to nearly £500 per annum, go to increase the general fund, and thus contribute to the reproductive character which it is the desire of the trustees to impart to it.

Before the dwellings at Spitalfields were completed, the trustees were enabled to possess themselves of other sites in districts similarly claiming attention. At Chelsea a plot, containing 13,616 square feet, was obtained for £4,616 18s. 6d.; for another at Bermondsey, with an area of 27,880 square feet, they gave £4,870 7s. 3d.; and a fourth at Islington, measuring 47,863 square feet, cost £8,646 5s. 6d.; and for £4,300 a fifth was acquired at Shadwell, the extent of which is over 73,890 square feet.

While the houses in Commercial-street were still

in progress, the trustees commenced, on their premises at Islington, the erection of four blocks of buildings, to comprise in all 155 tenements, with ample accommodation for upwards of 650 persons. The whole cost of these buildings, exclusive of the sum paid for the land, will amount, when the accounts shall have been closed, to £31,690.

Before the square at Islington was finished the trustees entered into a contract for the sum of £37,953 to build on a similar scale on their property at Shadwell, and the works there are now considerably advanced.

The principle and organisation in each of these extensive structures is the same. Drainage and ventilation have been insured with the utmost possible care; the instant removal of dust and refuse is effected by means of shafts which descend from every corridor to cellars in the basement, whence it is carted away; the passages are all kept clean and lighted with gas without any cost to the tenants; water from cisterns in the roof is distributed by pipes into every tenement, and there are baths free for all who desire to use them. Laundries, with wringing machines and drying lofts, are at the service of every inmate, who is thus relieved from the inconvenience of damp vapours in his apartments and the consequent damage to his furniture and bedding.

Every living room or kitchen is abundantly provided with cupboards, shelving, and other conveniences, and each fireplace includes a boiler and an oven. But what gratifies the tenants, perhaps, more than any other part of the arrangements, are the ample and airy spaces which serve as playgrounds for their children, where they are always under their mothers' eyes, and safe from the risk of passing carriages and laden carts.

In fixing the rent for all this accommodation the trustees were influenced by two considerations. In the first place, they felt it incumbent on them, conformably with the intention of rendering the Peabody Fund reproductive, to charge for each room such a moderate percentage on the actual cost of the houses as would bring in a reasonable annual income to the general fund. In the second place, they were desirous, without coming into undue competition with the owners of house property less favourably circumstanced, to demonstrate to its proprietors the practicability of rendering the dwellings of the labouring poor healthful, cheerful, and attractive; and at the same time securing to the landlords a fair return for their investments.

At the present moment, owing to the vast changes in the metropolis, by which the houses of the labouring poor have been demolished to so great an extent, the cost of accommodation for them has been greatly increased. It of course varies in different localities; but, on an average, the weekly charge for a single room of a very poor description is from 2s. 6d. to 3s.; for two rooms, 5s. or 5s. 6d.; and for three, from 6s. to 7s.

But the mere test of rent affords no adequate standard by which to contrast the squalor and discomfort of one of these tenements with the light and airy and agreeable apartments in the Peabody-buildings; and for one room there the charge per week is 2s. 6d.; for two rooms, 4s.; and for three rooms, 5s.

On the 29th of February, 1864, the first pile of buildings, erected in Commercial-street, Spitalfields, was thrown open to receive its inmates, and the number of applicants was and continues to be considerably in excess of the accommodation available.

The number of persons who took possession of their new homes in Spitalfields was upwards of 200, including such classes as charwomen, monthly nurses, basket-makers, butchers, carpenters, firemen, labourers, porters, omnibus drivers, sempstresses, shoemakers, tailors, waiters, warehousemen, &c.

In the buildings at Islington, which were opened in September, 1865, the inmates are of the same class, with the addition of persons employed in other trades—watchfinishers, turners, staymakers, smiths, sawyers, printers, painters, laundresses, letter-carriers, artificial flower-makers, dress-makers, carmen, cabinet-makers, book-binders, and others. The entire community there now consists of 674 individuals, of whom 19 are widows, the rest married persons and children.

In evidence of the improved salubrity of the buildings the superintendents report that ill-health is rare, and that the number of deaths since the first buildings were opened, in February, 1864—nearly two years ago—have been one man, aged 30, who died of a chronic complaint, and four children, one of whom was under five, and two under two years old.

The social contentment of the tenants is freely expressed; no complaints have been made of any of the arrangements provided for their comfort, and they all speak approvingly of the unaccustomed advantages they enjoy. Amongst these they especially particularise the security of their furniture

and effects, which are no longer liable, as they formerly were, to be taken in distress should the landlord become a defaulter.

As regards the moral conduct of the tenantry, the superintendent reports that habitual drunkenness is unknown, and intoxication unfrequent, and where the latter does occur to the annoyance of others it is judiciously dealt with by giving notice to the offender that in the event of its recurrence he must prepare to leave. There has been but one person removed for quarrelling and disturbing the peace; and one expelled for non-payment of rent. These exceptions, out of a community consisting of 880 persons, speak strongly for the self-respect and moral principles by which they are influenced.

RECEIPTS AND EXPENDITURE TO DEC. 1865.

RECEIPTS.			
Gift of Mr. Peabody	£150,000	0	0
Interest	10,672	9	4
Rents from Spitalfields, less expenses ..	764	8	3
Ditto from Islington, less expenses ..	179	8	8
	£161,616	1	3
EXPENDITURE.			
Paid for land at Spitalfields	£3,300	0	0
Cost of buildings	23,915	11	3
	£27,215	11	3
Paid for land at Islington	8,646	5	6
Paid on account of buildings	26,962	14	3
	35,608	19	9
Paid for land at Shadwell	4,450	3	10
Paid on account of buildings	7,998	5	0
	12,448	8	10
Paid for land at Chelsea	4,616	18	6
Ditto, at Bermondsey	4,870	7	3
Expenses to date for secretary, book-keeper, books, stationery, &c.	517	10	0
Cash at Interest	72,000	0	0
Ditto in Bank of England	4,338	5	8
	£161,616	1	3

CLARE COUNTY LUNATIC ASYLUM.

This building, in common with the majority of those in Ireland the purpose of which is similar, has been erected on a site selected for its salubrity, most desirable for its command of cheerful scenery, and its convenience to the main road of the county, to accommodate the lunatic poor for whom it is intended.

The site consists of about 40 acres of land within a mile of Ennis, on the Gort road, at the northern side of the town. The building faces the south, towards which the ground slopes gently. The character of the building is simple and bold, and suits very well for works of the class; there is a central tower of good outline; the windows generally are circular-headed, have plain square architraves surrounding them stopped on square sills. A little more finish is given to the central or official department than the rest, otherwise there is nothing striking as an architectural composition.

It consists of a front centre building containing the official residences and public rooms, two wing buildings for the patients, with two airing courts at the rear of each, and a rear centre building containing the dining-hall, kitchen, laundry, and other offices: the front and rear centre buildings are connected by covered corridors.

The extreme length is 600 ft., of which the front centre building occupies 80 ft., the wing buildings extend 200 ft. at each side, where they return about 100 ft., the remainder of the length being occupied by the infirmaries.

The extreme depth of the building at the centre is 330 ft., and embraces the kitchen and laundry offices, with the rear and front centre buildings. The day-rooms average in size 40 ft. by 24 ft. The dining and recreation hall is 56 ft. by 30 ft., and the height of two stories, with an open roof.

A series of day-rooms, on the ground floor, dormitories on the upper floors, connected by passages of moderate width, have been adopted. It is thought, with the sanction of the Board of Control, which in Ireland takes the place of the Commissioners of Lunacy, that this arrangement in separating the day and night accommodation of the patients, and otherwise assimilating their circumstances to those of ordinary life, is preferable to the usual corridor, or "ward system," as it is termed.

The infirmary buildings are placed at the extreme ends of the wings, having yards and airing sheds: in connexion therewith they have also separate entrances and staircases.

At the rear, connected with the airing courts of the male wing is a working ground, with suitable carpenters', shoemakers', tailors', and other workshops, opening to the same; at the other side of the kitchen and stable-yard, and connected with the airing courts of the female wing is the drying-ground, communicating at one end with the laundry offices. Suitable sheds and latrines are provided for all the airing courts.

The front centre building, which projects about 50 ft. from the wings, is placed at a higher level, and with a terrace front, admits of a basement, in which the kitchens and offices for the physician and matron are placed.

The chapel, which has a vestry and separate en-

trance for male and female patients, is situated on the first-floor at the rear of the front centre building.

The ground-floors of the wings are chiefly appropriated for day-rooms and single-rooms. The day-rooms nearest to the centre, at each side, are for the tranquil patients; those more distant for the refractory. These latter are mostly intended to sleep in single rooms, situated in the returns of the wings. The refractory patients all through will be separated from the rest. The tranquil patients will sleep on the upper floors chiefly in dormitories; and the middle class of patients will occupy the first or middle floor, where day-rooms and dormitories are provided for them.

The attendants' rooms are placed next the dormitories, with glazed doors between, and are in the proportion of one attendant to thirteen patients on an average.

The whole number of patients for which accommodation is provided is 260; and 25 ft. superficial are provided in the day-rooms for each patient, and 50 ft. superficial in the dormitories, the ceilings being 12 ft. in height.

Infirmary accommodation is provided for one-tenth of the whole number of patients, and single rooms in the proportion of 30 per cent. The water-closets, baths, and lavatories are placed together in projections, in order to simplify the arrangement of the drainage and water-supply, and to keep those offices as much as possible separated from the inhabited apartments.

Two staircases with solid wells, waiting and reception rooms, together with side entrances for patients and their friends, are provided for each wing.

The kitchen 33 ft. by 30 ft., adjoins a scullery and a boiler-house. The laundries and wash-houses are at one side of the kitchen court, and the kitchen stores and workshops at the other side with the attendants' dining-room and the female servants' rooms overhead. On the first floor of the range of buildings, having a separate entrance and staircase, are the storekeepers' rooms.

The farm offices, steward's house, and stables for the board of visitors, are to comprise a separate detached block of buildings, and a house for the gardener will be erected in a retired part of the grounds.

The walls are built of the local light-blue limestone, and the outside walls are lined with brick of the locality, the quoins and dressings neatly chiselled. Sandstone is used for staircases and door-sills; and, as a check to the spread of fire, should such ever happen, stone sills, resting on arches, are set across the corridors at intervals of about 40 ft. The cross walls which there occur are carried up to the under side of the slating. The plates for the floors throughout are carried on stone corbels, and wood lintels are very sparingly, if at all, used.

The roofs of the dining-hall, kitchen, and laundry are formed with open timber framing, and have louvred ventilators.

The floors of the water-closets, lavatories, and baths are formed of Valentia slate.

Almost throughout the entire building the interior is plastered.

The windows have wood sashes, except those to the single rooms for refractory patients, which are of wrought iron. The ventilation is to be effected by flues from each room, carried into horizontal galvanized iron air trunks in the roofs, thence into the side towers, in each of which a shaft is carried up, with fire-place at bottom, to ensure an upward current.

It is intended to have a heating apparatus under each wing, from which warm air may be supplied to each room, in connection with the system of ventilation. The day-rooms, dormitories, dining-rooms, residences, and some of the single rooms will have fireplaces.

The site affords considerable facility for obtaining water from the River Fergus, and a steam-pump is proposed to supply the principal cisterns at a high level, over the kitchen. Cisterns are also placed over the lavatories and baths. The rain-water will be collected in underground tanks.

These buildings were chiefly designed by Mr. W. Fogarty, architect, of Dublin, and are being completed under the joint superintendence of Mr. J. Fogarty, of Limerick, and Mr. A. C. Adair, the county surveyor of Clare. To this latter gentleman are entrusted the arrangements for the water supply, the bath and lavatory fittings, and the drying-closets.

The amount of the present contract, exclusive of boundary-wall, gate and other lodges, farm offices, baths, water-closets, and engineering works, is about £29,000; but it is estimated that when these additional works are completed, the total cost will amount to £35,000. Mr. Michael Meade, of Dublin, is the contractor, and Mr. Fitzgerald clerk of the works. It is expected that the whole will be completed within a year from the present date.—*Builder*.

BLACKROCK TOWNSHIP.

THE fortnightly meeting of the Commissioners of this township was held yesterday morning in the New Town-hall.

THOMAS VANCE, Esq., J.P., in the chair.

There was a very full attendance.

The building, finance, sanitary, and other reports were read, and cheques for the payment of the several accounts were filled.

The meeting was then made special, pursuant to notice, in reference to the borrowing of a further sum of £1,500 for the completion of the Town Hall.

After some discussion, it was agreed that the lender's solicitor should be paid, as on a former occasion, the sum of £15, together with costs out of pocket in relation to said loan.

The next subject matter of discussion was the alteration of the iron railing in the Main-street of the town of Blackrock.

Mr. Magrath, pursuant to notice, moved that the railing be altered at the expense of the township, based on the report of the surveyor, with a view to benefit two shopkeepers in the town.

The motion having been seconded,

Mr. Alma stated, previous to moving an amendment, that he wished to draw the attention of the commissioners to certain circumstances connected with the railing in question. In the year 1847, the famine year, the Main-street of the town was in a great state of disrepair, being sunk in a deep hollow, and the Back-road having been reduced, the material of that road was placed in the Main-street, in order to fill up that hollow. The consequence was that some houses on the right hand side of the street left in that hollow were given a step at either end for the accommodation of passengers. Numerous accidents having occurred there, it was considered advisable to apply for a presentment to the county to improve its condition. The specification not being considered judicious, the presentment session rejected the application. In the subsequent year another application was made, setting forth in more detailed and specific form the plan that was suggested, when a sum of £40 was granted for the improvement, to be carried out as detailed. That plan was conceived by the scientific mind of the late county surveyor, Mr. Fiith, and carried out by the skilful hands of Mr. Daniel Sexton, the contractor. When finished, the work met with the entire approval, not only of the public, but of the inhabitants of the houses themselves—giving where it was considered necessary sufficient openings, having due regard to the strength and durability of the work. That work having been solemnly considered and decided on by the authorities, Mr. Alma deprecated the idea of any individual seeking, for his own personal benefit, the interfering and uprooting of works done at the public expense. In furtherance of his objection Mr. Alma conceived that it was a blind attempt on the part of the applicant to anticipate the trade and business of his next-door neighbour, who was in the same line of business as provision merchant, by the closing of one passage and the opening of another. After some further observations Mr. Alma moved, as an amendment, "That the consideration of the question be adjourned for six months."

Captain Betham, Mr. Kelly, Mr. Crowe, and other gentlemen supported Mr. Alma's views on public grounds.

A division having been called for, and the numbers being equal, the chairman gave the casting vote in favour of the application.

On the motion of Mr. Alma, the following resolution was unanimously adopted:—"That in the event of a bill being introduced into Parliament in the present session in reference to the repairs of the Rook-road, with a view to absolving the city of Dublin from its proportion of its repairs, that the county and city members be requested to give every opposition to such bill; and further, that the townships of Pembroke, Rathmines, and Kingstown be invited to co-operate with this board in opposing such bill in every legitimate way."

The report of Messrs. McCurdy and Crowe as to the Town Hall was handed in and ordered to lie on the table (this building is now rapidly approaching completion, and reflects much credit on the spirited Commissioners of Blackrock).

The chairman said he could not congratulate them on their first entrance to the Town Hall until their surveyor had given up the key of the building, which was still very incomplete; but he trusted Mr. Barnes would give his attention and exertions towards its rapid completion. They came into it thus early in order to avoid the necessity of being under two rents. Complaints of gross neglect and inattention on the part of the workers, he regretted to learn, had lately been made.

NEW DOMINICAN CHURCH, TRALEE.

WE present our readers with an interior view of the New Dominican Church, Tralee. It is to be built on a site adjoining the Dominican Convent, with which it will communicate. At the north-west angle there will be a tower and spire about 120 feet high, and the west front will be enriched by an elaborate rose window of excellent detail. The total length is 126 ft.; and width, including aisles, 51 ft.; the height from floor to ridge of nave is 56 ft.

We need not say anything with regard to the interior, as the illustration will explain it fully. The church externally, is faced with rock-faced granite with Bath stone dressings, and is lined throughout, internally, with Combe Down Bath stone. The cost will be about £6,000. The architects are Messrs. Pugin and Ashlin; and the builder is Mr. Arthur Crosbie, Tralee.

THE LAW COURTS' COMPETITION.

IT is with great satisfaction we observe that a grievance to which we directed attention in the DUBLIN BUILDER of the 1st inst. has been in some measure redressed. A revised list of competitors for the new Law Courts has been prepared, and the name of Mr. Thomas Newenham Deane has been added, we presume as representative of Ireland. It is with pleasure we congratulate Mr. Deane on the honor done him, and the profession in Ireland on the scant measure of justice thus vouchsafed them.

PIRACIES.

IN a recent number of the DUBLIN BUILDER we gave an extract from a well-known work under the title of "Disinfectants." What is our amusement to find our paragraph introduced in the *Builders' Weekly Reporter* put in the form of letter to the Editor with the signature *Edward James*, a convenient individual, we presume, who is accountable for original contributions and observations like those of the mythical Mrs. Harris who had her existence in the celebrated Mrs. Gump's imagination solely. Such devices as this for filling a journal with original matter is very contemptible, and deserves exposure.

We desire to give notice that the right of re-publication of papers read at the Royal Institute of the Architects of Ireland with their illustrations is *strictly reserved*. We do not consider it necessary to take any further steps about the re-publication of Mr. E. T. Owen's paper on Perspective in the *English Mechanic*, but we have to request that these transactions entrusted to us by the Institute of Architects, will not be made use of without special permission from that body, whose property they are.

SUBWAYS.

THE question of the utility of forming subways in large towns, in which the sewers and gas and water mains could be laid, has been often debated on. The Editor of the *Practical Mechanic's Journal* recommends the following as the best mode of constructing them:—

Probably the best construction of subway would be a rectangular section, roofed with iron plates laid flat beneath the concrete and pavement; that the water mains should all be bracketed off and supported from the side walls one above the other, with room to get comfortably between them and the wall; and that the gas mains should all be laid on the bottom, in a separate longitudinal trench, brick floored, and separated each by brick dwarf walls. We do not believe that leakage, under proper arrangements, would occur at all, as a rule; but were it found essential, each of these troughs might be filled up



Pugin & Ashlin - Architects

E. Mezey Del. et Lith.

New DOMINICAN CHURCH - CHELSEA

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with well tempered clay puddle, in which the mains should be immersed, and which could be readily maintained always wet. Leakage would be an impossibility; in fact, it would be to place the mains under ground as at present, but in impervious soil, and in conditions under which it would not settle down, and where vibration and blows could not be given to the pipes.

In the article from which the above is taken, the subject is fully entered into, and the fact stated that nearly one hundred years ago a subway was commenced in this city, the principal features of which correspond with the above plan:—

Subways are no novelty, and strangely enough, probably the earliest notice that occurs of them in the history of civil engineering, shows the notion fully matured, attempted on a great scale, and rendered abortive by precisely the same sort of dog in manger opposition as in this the most recent case.

Not far from one hundred years ago, after the celebrated Sempé (the author of the "Treatise on Building in Water") had completed his bridge across the river Liffey at Dublin, called Essex Bridge after the Earl of Essex, then lord lieutenant of Ireland, and when the then long new street, Capel-street, was laid out and commenced running northward from that bridge, Major Taylor, an officer who then held the post of engineer under the Commissioners of Paving and Lighting of that capital, designed a capacious arched subway, to contain the sewers and the water pipes beneath the centre of the street—gas pipes and telegraph wires were unknown. Several hundred yards of this subway were constructed, and some of it is still in existence beneath the street, which we have ourselves examined. Stone corbels were provided to support the water mains at the sides, and the main sewer was beneath the invert bottom.

The work was discontinued, it is believed, partly from its cost being more than Dublin was (or thought itself) competent to expend, and partly that the City Corporation, which then possessed a monopoly of the water supply, refused to make any use of the subway.

It is not a little curious that in Dublin, which one hundred years ago was neither very rich nor very civilized, in its municipal arrangements at least, the first vestige—nay, rather, the fully developed idea—is to be found, of that which at the present hour is being carried out in Paris, the most polished city of the world, and is the subject of debate as to whether it shall be, or not be, in London.

DUBLIN TRUNK CONNECTING RAILWAY.

A SPECIAL meeting of the Municipal Council was held yesterday, for the purpose of considering and taking steps in relation to the Dublin Trunk Connecting Railway Bill now before Parliament. A long correspondence was submitted, which explained that, in consequence of certain clauses which Committee No. 1 of the Corporation had deemed necessary for the preservation of the rights of the Corporation, and for the benefit of the city, not having been accepted by the promoters of the bill, the agents of the committee of the Council had deemed it right to take a certain course, in order to secure to themselves the right of hereafter taking steps for the protection of the Corporation in the House of Commons. A long discussion ensued, in the course of which it was urged on the one hand that the Trunk Railway was objectionable in itself, and on the other, that, provided sufficient clauses were agreed to by its promoters, the Corporation ought not to oppose it. The course taken by Committee No. 1 was also a subject of discussion. It was resolved that the discussion of the matter be adjourned till the 22nd instant, in order to afford the promoters of the bill an opportunity of making any explanation or proposition they think fit to the house.

The following reports as to the progress of the works at the Liffey Tunnel, (the only portion of this line as yet commenced) have been recently laid before the directors:—

"GENTLEMEN,—We beg to state that since our last report the two permanent shafts on the north and south sides of the Liffey, for the tunnel under that river, have been successfully sunk to the tunnel level, and have both nearly reached their full depth. They have fully borne out the correctness of the borings originally made by us. The headings for the tunnel will be commenced shortly; and as the material to be chiefly passed through is now ascertained to be of the best kind for tunnelling, being strong blue clay, this work will no doubt proceed with expedition. The working drawings of the other portions of the line are now nearly prepared, and the government arbitrator has been appointed to assess the value to be paid for the land and other property required, so that the contractors will soon be put in possession of sufficient land to enable them to proceed with other sections of the work. We beg to forward a letter just received by us from Messrs. J. and C. Rigby, the contractors

for the line, which expresses their views as to the progress of the tunnel.—We have the honour to be, gentlemen, your obedient servants,

"JOHN S. BURKE,
"ROBERT MALLET."

CONTRACTORS' LETTER TO ENGINEERS.

"GENTLEMEN,—We have this day received our agent's report of the progress of the shafts at each end of the Liffey Tunnel, and find that the south shaft is still in firm, good clay, and is within five feet of the level of the rails for the tunnel. The north shaft is also now resting on clay, and we have ascertained that the same material exists for a further depth of 14 feet, which is the level of the rails on this side. We have no doubt but that analogous material will follow us the whole of the way across the river, and that we shall experience but little difficulty in the completion of the tunnel. We shall commence the headings to connect the two shafts in a very short time, for which, as you are aware, our preparations are already made. The present position of the works and the information we have already obtained in sinking the shafts on both sides of the river fully warrant the confidence we have always entertained of the satisfactory completion of this part of the work.—We are, gentlemen, yours faithfully,

"J. AND C. RIGBY."

IMPROVEMENT OF CLONTARF.

THE VERNON ESTATE.

THE attention of such of our readers as may be desirous of investing capital in building, is directed to the many eligible sites on this estate for detached villas and terraces, as appears by announcement in our advertising columns. Within the last three or four years some handsome houses have been built by Messrs. Plunkett and Magee, Kenny, and Tickell. The last-named gentleman is at present erecting another terrace of houses on the strand road, which are being occupied as fast as they are built; and Merchamp has been restored by the improving hand of Mr. Tickell. Clontarf stands in a peculiar and enviable position; on all sides extensive views are had of the sea, and of the Dublin and Wicklow Mountains, which are unequalled; the air in the locality is bracing and renovating. There are numerous sites for quiet retreats for our wealthy merchants. We shall be glad to hear of the progress of Clontarf: that it is enlarging its bounds, and will continue to do so, there can be no doubt. A new and handsome church for members of the Established Church is being erected, the ground for same having been freely and generously given by the lord of the manor, John E. V. Vernon, Esq.

THE O'CONNELL MONUMENT.

WE have been requested to give place to the following, which has already appeared in the columns of the *Trades' Circular*:—

"In our last issue we took occasion to refer to the shameful inaction of the O'Connell committee, and the disgust with which the public at large regard the delays, quibblings, and subterfuges which that body has resorted to, instead of dealing in a straightforward and candid manner towards those of their fellow-citizens and fellow-countrymen who are watching with such deep interest for their too long-deferred decision. It is now almost notorious that it was a foregone conclusion with certain gentlemen on that committee to give the execution of the monument to Mr. Foley; but, fearing a hostile public opinion, they have had recourse to a series of adjournments and the most bitter wranglings, in order to weary out an honest and determined opposition. Some time ago a communication was received from Mr. Foley, in answer to one from the secretaries, intimating that he would not furnish a design unless the execution of the whole were entrusted to him; in consequence of which a sub-committee was appointed to confer with him on the matter. At the last meeting of the general committee the public were given to understand that Mr. Foley was coming to Dublin for the purpose of a conference, and that all the difficulties would be at once removed. Two months have now elapsed, and neither the sub-committee nor general committee have been called together. What we would recommend is this—that the Irish public at once demand, by protest and every other legitimate means, that one of the designs which have already been pronounced upon by competent judges be adopted, and the work given into the hands of some of our resident sculptors, who are at present pining away for want of patronage, while Mr. Foley, as we are credibly informed, has as many orders as would keep him fully occupied for the next twenty years. The cruel injustice which has, up to the present time, been inflicted on resident genius by a few oppositionists on the O'Connell committee, deserves the strongest censure of every true and honest Irishman, no matter what his peculiar or

political opinions may be. We would also recommend the trades' unions in the provincial towns to give expression to their feelings on this subject, and thus bring a strong public opinion to bear on the committee, who would thereby be compelled to expend £15,000 in promoting the industrial prosperity of Ireland—the encouragement of art and manufactures—the only true means of honouring O'Connell's memory."

NOVEL HYDRAULIC MACHINE.

THERE was to be seen a short time ago, between the Pont Neuf and the Pont des Arts, a new hydraulic machine, invented by M. Roman, 37, Rue de Lille, Paris, for utilising the force of currents and deriving a motive power therefrom. It consists of a large raft or barge similar in size and shape to the open wash-houses on many continental rivers. This is fitted with a series of transverse rollers, on which moves an endless chain passing under the boat, and fitted with a great number of float-boards, 2 mètres asunder. A greater surface is thus brought to play against the current than in an undershot-wheel, which yields, even in the best condition, barely 30 per cent. of the theoretic force of the water. As in all ingenious and useful inventions, the principle on which this machine acts is of extreme simplicity and facility of application. If we suppose a float of an undershot-wheel submitted to the action of a current of water which impels it with a given force; if to this float we add a second parallel to the first, at 2 mètres' distance, behind it, the second float will also be impinged upon by the water. It has been clearly demonstrated by experiment that the effort exerted on the second float is equal to 75 per cent. of that brought to play upon the first. A third float-board will be subject to the same laws as the second, the result being, that a series of parallel floats will obtain from the force of the stream a motive power only limited by the velocity of the water and the constructor's design. Last year, a small trial-machine, six of the boards being constantly immersed, gave by Prony's dynamometer, a useful effect of three-, four-, or even five times that of an ordinary undershot-wheel.

The present machine has always thirty-four float-boards immersed; and though the velocity of the Seine is only 45 to 48 centimètres (17.72 in. to 18.9 in.) per second, in the trials made in presence of our correspondent, the useful effect has been on an average twelve times greater than that of ordinary wheels. As to the applications of this hydraulic engine they are innumerable. Geared into a series of pumps, either for the supply of towns or for purposes of irrigation, it is capable of becoming a great source of economic power; while the working expenses are reduced to the charge of simple inspection, no manipulation being required.—*Builder*.

THE HEALTH OF DUBLIN.

(From the Registrar General's Weekly Return.)

In the Dublin Registration District the births registered during the week ending March 10, amounted to 186—107 boys and 79 girls. The deaths registered during the week were 212—109 males and 103 females. The deaths from fever were 12. There was one death from measles. Whooping cough caused 6 deaths. Five deaths were attributed to diarrhoea. Convulsions carried off 13 children. There were 50 deaths from bronchitis. Phthisis or pulmonary consumption was fatal in 40 instances. Apoplexy proved fatal in five, and paralysis two instances. Ten deaths were the result of heart disease. Three deaths were ascribed to diseases of the liver. Six accidental deaths were registered during the week.

The number of deaths registered in the entire of the Dublin Registration District during the week represents an annual ratio of 35 in every 1,000 of the population by the census in 1861. The deaths registered in No. 1, North City District (Summer-hill), afford an annual ratio of 24 in every 1,000 of the population—the Mater Misericordiae Hospital is situated in this district; in No. 2, North City District (Coleraine-street), which includes the Rotundo Lying-in Hospital and Jervis-street Hospital, the deaths registered amounted to 45 per 1,000; and in No. 3, North City (Blackhall-street), to 76 per 1,000;—the North Dublin Union Workhouse, the Hardwicke and Whitworth Hospitals, and the Richmond District Lunatic Asylum, are situated in this District. In No. 1, South City District (Meath-street), which includes the South Dublin Union Workhouse, the Cork-street Fever Hospital, and Steevens' Hospital, the deaths registered afford an annual ratio of 38 per 1,000; in No. 2, South City District (High-street), the ratio was 36 per 1,000; in No. 3, South City District (Peter-street), which includes the Coombe Lying-in Hospital, and the Meath and Adelaide Hospitals, it was 35 per 1,000; and in No. 4, South City District (Grand Canal-street), in which Sir Patrick Dun's and St. Vincent's Hospitals are situated, it was 12 per 1,000.

ON TIMBER AND DEALS.*

(Continued from page 58.)

THE next consideration is the mode of rendering the timber fit for use, and the time which can be afforded for that purpose. There are natural and artificial means of seasoning, both of which have their recommendations; it is thought, however, by some, that the former has the right of preference, as it gives greater toughness, elasticity, and durability, and therefore should always be employed in preparing timber for practical purposes. The major part of our best timber is imported from the north of Europe, and is immersed in docks, where it lies floating till sold for immediate use; the consequence of this is, that the timber (though it may previously be properly seasoned) becomes swelled too much, beyond its former and ultimate bulk, is hastily framed together while the very water is running from it, and very soon after it is so converted it shrinks to such a degree, that every tenon becomes loose, every joint strains falsely from the shrinkage, and every ceiling and quartered partition cracks by the opening, diminishing, and distortion of the woods. The effect of this pernicious system may be seen in almost every house in the metropolis, showing itself in rents, which are caused to the timbers by the irregular strain in shrinkage. Some persons state that the immersion of timber in water is the best method of seasoning it, and I was a few days since in conversation with a London timber merchant, who told me, that the way he seasoned his timber was to immerse it in water for a couple of months, and then stand it end-ways, out of the rays of the sun, but open to the wind and rain. He considered that a windy, showery day, such as we have had lately, was the best possible weather for seasoning timber. Timber for ordinary purposes, should be shrunken to its smallest limits before it is worked up: the least possible change should occur in the timber after the work is framed and adapted; for all the oblique joints, by shrinkage, become imperfect, each bearing timber then hangs straining upon a single point, instead of upon a flat direct abutment; thence many of the struts and other bearing timbers rend, by the weight hanging merely upon their angles. Our specifications are very strict in the requirement of the perfection and proper seasoning of timber; but these precautions are almost useless, as the builder can hardly procure at any price timber which is not in a dropical condition; and twelve months, in general, suffices to diminish in bulk or split our carpentry, whether it is framed for the palace or the cottage, the public or the individual. This may appear rather a sweeping statement, but I think many will bear me out in the truth of it. Two instances have occurred to me of this fact, within the last few weeks—one in the shrinkage of a large tie-beam, and the other in the shrinkage of some oak wainscoting. The tie-beam belonged to one of the principals of a large building recently erected, the upper floor of which was not ceiled: within one week, and almost before the premises were finished, the upper floor was occupied by a small army of those "who work at the sewing machine." The heat of the rooms began to have an effect upon the beams, and this one in particular, and large shakes and splits opened, and the timber had to be restored, or rather replaced with new. This was, no doubt, owing to the unseasoned wood, which had probably been, within a week or two of being used, lying in a wet dock at some of our timber yards. The other instance is with respect to some oak framing to a large public room, erected within the last five years in London. The architect was very particular in having, what he considered to be, a good piece of workmanship, and good materials, forming the front of two galleries; the work was squared, framed, and when finished, appeared certainly a creditable production; but soon after it became subject to the latent heat of a meeting room, the joints opened, and the work has since been patched up with slips of oak inserted in the openings, some of which had opened nearly 3-16th inch; all this undoubtedly arose from the unseasoned state of the wood.

After timber is felled and sawn, it should be laid along, one piece upon another, only kept apart by short blocks, interposed to prevent a certain mouldiness, which they are apt to contract by sweating one upon another, which frequently produces a fungus, especially if there be any sappy parts remaining. By this means, the rain and the excessive heat of the sun acting upon the timber, it will dry without shakes or fissures. The best way to dry deals is to place them in sheds, due east and west, in Bristol piles. The timber should continue in this situation for two years if intended for carpentry, and three years if for joinery; the loss of weight which should render it fit for the purposes of the former being about one-fifth, and for the latter about one-third. Messrs. Broadwood, and other large pianoforte makers, have their deals and mahogany piled for

years before they are used. If timber is to be used round, the core should be bored out, as by this means splitting is prevented. If it is to be squared into logs, it should be done soon after some slow drying, and whole squared, if large enough, as that removes much of the sapwood, facilitates the drying, and prevents the splitting which is apt to take place when it is in the round form, in consequence of the sapwood drying before the heart, from being less dense; also, if it may be quartered, it is well to treat it so after some time, as the seasoning is by that means rendered more equal. It is well, also, to turn it now and then, as the evaporation is greatest from the upper side. To prevent timber warping, it should be well seasoned before it is cut into scantlings; and the scantlings should be cut some time before they are to be used, and if they can be set upright, so much the better (in order that the seasoning may be as perfect as possible), as they will then dry more rapidly, and, as I have stated, the upper side dries sooner than the lower, they ought therefore to be reversed at intervals. Scientifically considered, the drying is only said to be complete when the wood ceases to lose weight from evaporation; this only occurs after twice or thrice the period usually allowed for the process of seasoning. Some, however, prefer to keep the timber as moist as they can, by immersing it in water, to prevent its warping or cleaving. Evelyn, in his "Sylva," particularly recommends this way of seasoning for fir. In this case, when the boards have lain a fortnight under water, they have them set upright in an airy place during the heat of summer, and turned every day; by this practice, new-sawn boards (it is said, by those who are advocates of the soaking system) will floor much better than those which have had many years' dry seasoning. To prevent all possible accidents, when floors are laid, let the edges be shot, and brought to a joint, or nearly so, lay them down the first year, and finally fasten them the next; they will then remain without shrinking, provided they be kept dry. The deals imported from abroad have a year's more seasoning than if they were imported in the log, and cut up in this country; still, it would be a great advantage to have some of them thinner, and so would be sooner seasoned, and fit for use. The deals are cut three inches thick; in that state they are kept some time to season, and after they are cut the inside of the board is not so well seasoned as the outside, consequently it must undergo a second seasoning, and it would therefore be a great convenience to have deals of various thicknesses. At the end of eighteen months from the time of importation they are scarcely dry enough for the consumer's use.

For the purposes of joinery, steaming and boiling are very good methods of seasoning, as the loss of elasticity and strength which they produce, and which are so essential in carpentry, is compensated by the tendency to shrinkage being reduced; the durability also is rather improved than otherwise, at least from steaming. It has been ascertained that, of woods seasoned by these methods, those dry soonest which have been steamed; but the drying in either case should be somewhat gradual, and four hours are sufficient for the boiling or steaming process. Stove drying, for joiner's work, is also practised by many builders.

The mere seasoning of wood, though it will not altogether prevent its decaying, nevertheless, considerably diminishes its tendency to do so, and is of the very utmost importance in many cases. The value of any process for seasoning wood depends, of course, to some extent, on the time required for its completion. Davison and Symington's method for speedily and effectually seasoning wood, by exposing it to the influence of a rapid and continuous current of heated air, so that it soon becomes thoroughly dry, appears to be satisfactorily proved. Langton's method of seasoning, by extraction of the sap, is another way that is considered well worthy of notice. It consists in letting timber into vertical iron cylinders at top, and the water being heated, and steam used to produce a partial vacuum, the sap, relieved from the atmospheric pressure, oozes from the wood, and being converted into vapour, passes through a pipe provided for that purpose.

Smoke drying in an open chimney, or the burning of furze, shavings, or straw under the wood gives it hardness and durability, and by rendering better, destroys and prevents worms: it also destroys the germ of any fungus which may have been commenced. Virgil seems to have been aware of its utility, when he wrote the passage which is thus translated by Dryden:—

"Of beech, the plough-tail, and the bending yoke,
Or softer linden, hardened by the smoke."

Beckman, in his "History of Inventions," quotes a passage in Hesiod to the same effect, and adds, "as the houses of the ancients were so smoky, it may be easily comprehended how, by means of smoke, they could dry and harden pieces of timber." In

this manner were prepared the pieces of wood destined for ploughs, waggons, and the rudders of vessels. Virgil also says in another place:—

"These long suspend where smoke their strength explores,
And seasons into use, and binds their pores."

When timber or boards have been well seasoned, or dried in the sun, or air, and prepared for fixing, care should be taken to defend or preserve them, which may be done with smearing them over with linseed oil or tar, or the like matters, which contributes much to their preservation and duration. The practice of the Hollanders deserves our notice in this respect; who, to preserve their gates, draw-bridges, sluices, &c., coat them with a mixture of pitch and tar, whereon they strew small pieces of cockle and other shells, beaten almost to powder, and mixed with sea sand, which incrust, and arm the timbers wonderfully against assaults of wind and weather. Some, again, advise to bury the pieces of timber in the earth, whilst others are for scorching and seasoning them in fire, especially piles, posts, &c., that are to stand either in the water or in the earth. Sir Hugh Plat informs us, that the Venetians burnt and scorched their timber in the flaming fire, continually turning it round with an engine, till it had got a hard, black, crusty coat upon it; the wood being brought by that means to such a hardness and dryness, that neither earth nor water could penetrate it. Scorching and drying are undoubtedly good for preventing and destroying infection, but have to be done slowly, and only to timber that is already seasoned; otherwise, by encrusting the surface, the evaporation of any internal moisture is intercepted, and decay in the heart soon ensues; if done hastily, cracks are also caused on the surface, and which, receiving from the wood a moisture, for which there is not a sufficient means of evaporation, renders it soon liable to decay.

When timber is cut before the sap is perfectly at rest, it is bad, by reason of the worm which will certainly breed in the timber. Besides the common worm, to which timber in its dry condition is liable, there are a variety of a more formidable character, which commit their ravages on the timbering of sea works; of these, the most common are the pipe worm or teredo, a species of pholas, the cossi, and another mentioned by Smeaton, which is almost invisible. For the preservation of timber from the teredo, and other sea worms, various methods have been devised. Stockholm tar has been used, but it is of little service, owing to its being manufactured from vegetable substances, and if exposed to the sea the salt acid of the water will eat it away in a very few weeks. Common gas or coal tar has likewise been tried with similar effect; and Kyan's patent corrosive sublimate, or the bichloride of mercury, has been used, but has proved equally useless. Some persons advise that the oil of tar, and pyrolignite of iron, be used; the pyrolignite of iron must be of very pure quality, and the timber must be dry; afterwards the oil of tar should be applied, and not on any account should it contain a particle of ammonia. Mr. Pritchard, of Shoreham, has tried this process in hydraulic works, with great success, and states that in timber piling it destroys sea worms, and supersedes the necessity of coating the piles with iron nails. It is exceedingly difficult to prescribe for the preservation of timber from the teredo; but one thing may be stated as certain, that at present pyrolignite of iron has superseded all the patents.

Besides worms, timber is exposed, chiefly in the Indies, to most dreadful havoc from some species of the ant tribe; from the destructive jaws of the termite or white ant there is nothing secure, unless it be stone or metal; roofs, floors, and other parts of buildings that are constructed of wood are infested by them, and will present when painted a solid appearance, while they are completely hollowed; furniture and wooden utensils alike undergo their devouring ravages. The red ant of Batavia is another little devastator. To destroy ants in wood, kyanize the wood, corrosive sublimate being an effectual poison to them. Arsenic is a good destructive, and charcoal is said to prevent their depredations, though I do not know how it is applied.

But what else have we to battle against, which is worse than the teredo, or the entire ant tribe? Dry rot, which is to timber what consumption is to the human frame: once let it seize bold of a log, and you may send it to Madeira without any effect.

The dry rot may be divided into three classes; the first is generated in the earth, the second in the walls of buildings, and the third is produced by the timber itself. Of the fungus causing the dry rot as generated in the earth, little is necessary to be said. It is a white and fibrous substance very commonly attached to the roots of trees, the banks of hedges being sometimes covered with it; this fungus when attached to timber produces dry rot. Hence it appears that we frequently build on spots of ground which contain the fundamental principles of

the disease, and thus we are sometimes foiled in our endeavours to destroy the fungus by the admission of air. In this case the disease may be encouraged by the application of air as a remedy. Where workmen are employed in buildings which contain dry rot, and where they are working on ground which contains the symptoms of this disease, they have been known to suffer in their health; and one of our first builders informed me some time since, that whilst erecting some houses at Hampstead his men were never well. He afterwards ascertained that the ground was affected with dry rot, and that at present nearly all the timbers were in a state of premature decay.

The fungus which issues from the brickwork of buildings has likewise the property of decomposing timber; it is found in the spaces between the bricks, &c. The causes of it may often be traced to the use of loamy earth and dung with sand for the composition of mortar for walls. This refuse being mixed with a small proportion of lime, and deposited in a humid and warm situation, creates a fungus, which will vegetate, and assume a flat, corrugated or spongy substance, which issues from the space between the bricks and penetrates into the ends of the brassmums, joints, &c. No mortar should have sand as a compound unless the sand be previously washed, to separate the loamy particles, which serve as a hotbed for the vegetation of fungi.

Of the fungus causing the dry rot as produced in timber, various opinions have been held. Pepworth, in his treatise on Dry Rot, says as to its probable origin, "that the germs may be conveyed into the earth by the rains, and thence absorbed with the sap into the bodies of trees and other vegetables; and when the putrescence attendant on their decay has prepared a suitable fluid for the germination of the seeds, that they produce fungi." That these seeds are germinated by the sap is conformable to the opinion of Pliny, who says that fungi are produced by sap.

Fungi are not in some cases the primary cause of the decay of timber; they are not the disease, but the effects of it; and thus a small portion of unseasoned timber, when placed in a building, may generate the dry rot, and disseminate its baneful effects throughout the edifice into which it may have been unwarily introduced. Sometimes the dry rot is caused by a collection of putrescent matter adhering to the timber, caused by an adjacent vegetable corruption and to a natural disposition in the timber to decay, assisted by the situation in which it has been placed. When the parts of an edifice are so formed that the successive admission of pure air cannot take place, the exhalations from corrupted matter in the earth will collect upon the surface of the timber, affording a proper recipient for the seeds of fungi, which speedily become attached to and find nourishment within it. Many instances of the propagation of fungi might be given, but as all are derived from the same cause, viz., vegetable corruption, it will be unnecessary to dwell longer upon them. In a review, therefore, of the foregoing observations, it will appear that vegetable corruption is suitable to receive and germinate the seeds of fungi, and that such fungi are capable of absorbing the medullary particles of the wood, thereby wholly decomposing it; and that the timber itself, when confined or deposited in warm and moist situations before the motion of the particles is suspended, necessarily undergoes the fermentation which is attendant upon vegetables, by which nature effects the purposes of reproduction, and is consequently decomposed, with similar appearances to that effected by the fungus. To descend from the theoretical to the practical part of the subject, there is one cause of the decay of wood which is very seldom noticed, but which is at the same time a very important thing; and that is, the use of paint in buildings. When wood is painted on every side, the moisture within it is completely sealed, and must become stagnant; decomposition and decay of the timber immediately commences. It is clear that, except when thoroughly free from moisture, or as it is called seasoned, painting must be as effectual a method as any for accelerating its decay. If wood is painted on one side only, it will last as long again as if painted on both sides: experiment has proved this to be the fact.

In regard to the dry rot in connection with the different qualities and species of foreign timber, a few words may not be out of place. In considering the liability of any particular species to take the dry rot, consideration must be paid to the circumstances under which it is imported. Sometimes it is a long time coming here, while at others it is imported in a very short period. The length of time has a great deal to do with its likelihood of taking the dry rot; it may have a very favourable passage, or a very wet one, and the ship is very often in some degree affected with the rot. The rot perhaps begins in the ship, and it may often be seen between the timber or deals, when it will impregnate the

wood to a great extent. It is a difficult thing to say whether it is inherent in the timber or not, but of this we may be certain, that where there is a fœtid atmosphere it is sure to grow. American timber is more subject to it than the Baltic, though some think otherwise, for Baltic timber sometimes decays in four or five years. Turpentine is a preventive against dry rot, and American timber is largely impregnated, especially the redwood timber, but not the yellow wood—the yellow wood is exposed very much to the dry rot. Very few cargoes of timber in the long coasts from America in which in some part of every log you will not see a beginning of the vegetation of the dry rot. Sometimes it will show itself only in a few reddish, discoloured spots on the surface of the log, which, if you scratch with your nail, you will find that to the extent of each spot the texture of the timber to a slight depth is destroyed; and will be reduced to powder—you will generally see also in these spots a white fibre growing. If the timber has been shipped in a dry condition and the voyage has been a short one, there may be some logs without a spot, still, I should think there was scarcely a cargo that came from America in which you will find many logs of timber that are not affected. But if the cargo has been shipped in a wet condition, and the voyage has been a long one, then a white fibre will be seen growing over nearly every part of the surface of each log, and in cargoes that have been so shipped all the logs of yellow pine, red pine, and oak are generally more or less affected on the surface.

Every deal of yellow pine that has been shipped in America in a wet state, when it arrives here, is also partially covered over with a network of little white fibres, which are the dry rot in its incipient state. There is no cargo even that is shipped in tolerably dry condition in which, upon its arriving here, you will not find some deals with the fungus beginning to vegetate on their surface. If they are deals that have been floated down the rivers in America, and shipped in a wet state, they arrive quite covered with this network of the fungus, so that force is often necessary to separate one deal from another, so strongly does the fungus occasion them to adhere. They grow together again, as it were after quitting the ship, while lying in the barges before being landed. Accordingly, if a cargo has arrived in a wet condition, or late in the year, or if the rain falls on the deals before they are landed, and you pile the way in which Norway and Swedish deals are piled, that is, flatways, in six months' time, or even less, the whole pile of deals becomes deeply affected with the dry rot; so that, when the flat surface of one deal is upon the flat surface of another, the rot penetrates to the depth perhaps of one-eighth of an inch. You arrest its progress by repiling the deals during very dry weather, and by sweeping the surface of each deal before it is repiled; but the best way is to pile the deals in the first instance upon their edges, by which means the air circulates round them, the growth of the fungus is arrested, and the necessity of repiling them is prevented. If the ship is built of good, sound, well-seasoned heart of oak, I question if the dry rot would affect it; but in order to prevent its doing so the precaution is usually taken, I believe to scrape the surface as soon as the hold is clear of the cargo of timber. Were the cargo not cleared and the hold not ventilated, a ship that was permanently exposed to this fungus would no doubt be affected. It is very easy, however, to prevent its extending, by washing the hold with any disinfection solution. There are two descriptions of European deals very liable to take the dry rot, viz., yellow Petersburg deals, and yellow and white battens from Dram, in Norway. When Dram battens, which have been lying a long time in bond in this country, have not been repiled in time, they have been found as much affected by the dry rot as many American deals, though this has not happened in so short a time as has been sufficient to rot American deals. The fungus growing on the Petersburg deals and Dram battens has all the characteristics and effects of dry rot as exhibited in the American deals, the detection of dry rot being in most cases the same. I have not time to go into the different patents for the cure and prevention of dry rot, some are excellent, others good; many ineffectual, and many absurd; some other evening, in some other session, if you will hear me, I will go into the whole subject.

CORRESPONDENCE.

BELFAST ALBERT MEMORIAL.

TO THE EDITOR OF THE DUBLIN BUILDER.

SIR,—Feeling that I have some claim on the Committee in this matter, and having in vain applied to the secretary for information, I take the liberty of troubling you with a statement of my case in the hope—as I am not on the ground, to urge the matter

personally—that through the circulation of your journal it may come before some members of the committee. You may, perhaps, recollect that, though considerable discussion arose as to the respective merits of the two first designs, mine was *unanimously* placed third in order of merit. You may also recollect that one of the two former designs was withdrawn from the competition. Owing to this circumstance I considered that mine should take its place and be entitled to the second premium. I wrote accordingly to the secretary, and received from him an acknowledgment of the justice of my claim, but since then I have not been able to obtain any further information or any admission on the part of the committee that my claim should be recognised. Beyond this, however, judging from rumours that have reached me as to how the proceedings in connection with the actual erection of the Memorial have developed themselves, I am now led to consider myself justified in claiming no less than the *first premium*; and for the following reasons: As usual in competitions, a limit of expenditure was specified, an over-stepping of which in the cost of carrying out a design was to prove a disqualification according to the printed conditions. The cost of the superstructure of the selected design was accordingly guaranteed by its author, Mr. Barre, not to exceed the specified sum, £1,800 (a separate and sufficient amount having been set apart for the foundations). In addition to this guarantee, the form (as it would appear) was gone through of publicly advertising for tenders for the erection of the work. In reply, only three tenders were submitted, which were so surprisingly close in amount to one another and to the specified limit of expenditure as to suggest to an uncharitable mind the idea of their having been subjected to some slight arrangement. However, the lowest was accepted. So far well. In the proceedings which followed I do not wish to charge the committee as a *body* with intentional wrong-doing, but it is really very hard to comprehend how some of them, as *individuals*, can be held exonerated from being a party to or in some degree cognizant of the underhand doings in which I shall now refer, and which I believe are anything but a secret in Belfast; so little, indeed, that the *present* mayor, I am told, has in consequence of these rumours declined to be nominated chairman of the committee. The rumours amount to this, that the builder who was eventually declared contractor for the work refused to sign a contract until a document of some kind was perfected assuring to him the payment of a further sum of £1,500!! over and above the amount of the ostensible tender; and that this document has actually been signed by certain individuals, and has been lodged for safe keeping in the hands of respectable solicitors in Belfast. This, sir, if a fact—which my information leads me to believe it to be—should speak for itself.

My design may not have been so striking or attractive as those of the more favoured competitors, owing, I might suggest, to my desire to observe the conditions of the competition, and, consequently, to the presence in mine of that element—*economy*, the absence of which is now made so apparent in at least one of the others.

Under such circumstances, sir, I think you must agree with me that in any case I am entitled to the second premium; unless the cost of erecting a memorial according to my design is proved to exceed the sum originally specified, and that the committee are bound both in law and equity to award to me the *first premium* should the statements above referred to prove to be correct.—Faithfully yours,

MORTIMER H. LINKLATER.

22, Princess-st., Manchester.

NOTES OF NEW WORKS.

On the 6th inst. the foundation stone of a new Presbyterian Church was laid in West-street, Newtownards, by J. Brownlow, Esq., agent to the Marquis of Londonderry. The building will be Early Pointed, and will consist of nave, north and south transepts, choir, north and west porches, vestibule, &c. The interior of the church will be 70 feet long, the nave 40 feet 6 inches in breadth, and the transepts 60 feet 6 inches. There is to be an octagon session-room in the rear, having connecting communication with the church. A tower and spire at north-west corner 130 feet in height. The work will be executed in Scrabo sandstone, having tooled dressings to doors, windows, buttresses, &c., the plain walling being of pitched-face ashlar. The windows will have cut stone mullions with tracery, and will be filled with stained glass. The church will have sittings for 550 people—450 on ground floor, and 100 in gallery at west end. The cost will be about £4,000, which, with the site, was given by Mr. Strean, a member of the congregation. Architects, Messrs. Boyd and Batt, Belfast; builder, Mr. John Hanna, Newtownards.

By unremitting exertions extended over a number of years, the parish priest of Headford, County Galway, has succeeded in raising a large and spacious church, which is to be dedicated to B. V. Mary. The building consists of a nave 90 feet in length by 30 feet wide, transepts 30 feet by 15 feet, and a small chancel or sanctuary. The portion of the nave east of the transepts may be correctly regarded as the ritual chancel. It has triplet windows in the eastern wall on the north and south sides of the sanctuary arch, and it is proposed to erect altars on each side under these windows. The sacristy is situated in the north-east angle between the nave and transept.* There are elaborate traceried windows similar in design in the eastern and western gables, and the latter is surmounted by a bell-cot. The roof is open timbered and stained, and is somewhat novel in construction. The nave westward of the transepts is three bays in length, lighted by six double windows. The original architect to the building was Mr. Richard Pierce, since whose demise the works have been carried under the superintendence of and from details supplied by Mr. William G. Murray, R.H.A. A powerfully toned bell is in process of being cast by Messrs. Murphy, of Thomas street. The works have been carried out under the more immediate superintendence of Father Peter Conway by whom the funds for the purpose have been collected—the greater portion in America. The materials used for dressings, &c., are the local stones of the district.

A very extensive pile of building is about to be erected at Castleknock College, of which Mr. George Goldie is the architect. It will be connected with the existing building by a corridor only, and is intended more especially for the reception of clerical students and the accommodation of the community. The frontage of the building will be 165 ft., with a pavilion four stories in height in the centre, surmounted by a cupola, with wings on either side three stories high. On the ground floor the entrance hall occupies the centre of the building, on each side of which are study halls 30 ft. by 20 ft. In each wing are two study halls 41 ft. by 24 ft. each. The first floor contains the community rooms, and this and the third floor contain in all thirty-three airy and spacious bedrooms. The upper story and lofty roof of the central pavilion is devoted to a library and museum 45 ft. by 35 ft., with additional accommodation in a gallery. The exterior of the building will be of the most severely plain character, approaching almost to ugliness. Mr. James Freeman has been declared contractor. Cost, about £6,000.

A passenger station is to be built at Athboy, on the Dublin and Meath line of railway. Tenders up to the 10th prox.

The Co. Clare Grand Jury have passed a presentment for the sum of £87 10s. to construct a metal railing to enclose the O'Connell Monument at Ennis.

Lifford jail, County Donegal, is to undergo alterations, with a view to adapting it to the separate system. Cost, £6,000. Architect, Mr. M'Curdy.

The Limerick Grand Jury have passed a resolution requesting the corporation to take the proper steps to have the worthless and unseemly old houses, that now stand in front of St. Mary's Cathedral, near the court-house, removed. These houses are the property of the corporation, and of no credit to them or to the city.

Waterside Presbyterian Church, Londonderry, was opened on the 4th inst. The cost has been £2,400. Architect, Mr. John Guy Ferguson; builder, Mr. Alexander M'Elwee.

A new flax-mill is about to be commenced at Cork, for the firm of Messrs. Wallis and Pollock.

Proposals are required for the erection of two large warehouses in Victoria-street, Belfast, Mr. Hastings, architect. Tenders up to the 22nd inst.

New gas-works are about to be erected in Newry, Co. Down, by a new company, who have offered to purchase the Monaghan-street mill premises for this purpose, from Mr. Robert Glenny.

A new organ, by Messrs. Telford, St. Stephen's-green, has been erected in St. Mary's Church, Donnybrook.

The Belfast Harbour Commissioners will receive tenders up to the 10th of April, for the construction of an iron caisson for their new graving docks.

* If we might venture to offer a suggestion we would say, from our inspection of the plan, that, excellent as this arrangement is, a still better one would be to devote the whole of this portion of the church to the service of the high altar, to adopt the present sacristy on the north side as a chapel of the Blessed Virgin, opening by an arch into the transept, and to place the third subsidiary altar on the eastern side of the south transept. This it appears to us would afford a much greater space for celebrating at the high altar, would be more ecclesiologically correct, and as a sacrifice of space would involve the erection of another sacristy, with all due deference we commend the suggestion to the notice of the worthy gentleman to whose energy the parishioners of Headford owe their church.

Lord Downshire has granted a site for a new Masonic hall at Carrickfergus, Co. Antrim. He gives the brethren a choice of three pieces of ground, one situate in First Quarter West, one in West-street, and one in West-lane.

The trustees of Sheil's charity, in addition to the almshouses which are to be built at Dungannon, intend also building others at Killough, Co. Down, of which place the late Mr. Sheil was a native. They have taken ground for this purpose.

Government intend constructing graving and floating docks at Warrenpoint, Co. Down.

The Limerick Harbour Commissioners invite tenders for the excavation, dredging, and removal of the Cock-rock shoal, in the Shannon, near Tervoe, Co. Limerick. Tenders to 19th inst.

Tenders will be received by the Board of Public Works, up to the 21st. inst., for building a boat-house, watch-room, and launching-slip, at Bangor coast-guard station, Co. Down.

The County Clare Grand Jury have appointed a committee to make arrangements for the repair of Bindon-street Bridge, Ennis, or to contract for a new metal roadway.

The new Presbyterian church at Naas will occupy a prominent position in the centre of the town at the end of the market-place, taking the place of some unsightly houses, and almost under the shadow of the huge unfinished tower of the parish church of St. David's, an eccentric pile—a very Babel on a small scale—began by a former Earl of Mayo in the last century, who left on it this unpretentious, and unintentionally appropriate inscription—

RUINAM INVENI, PYRAMIDEM RELIQUI.

It—we refer to the unbuilt non-conforming edifice, and not to its established neighbour—will be of a simple character. The interior dimensions will be 48 ft. by 24 ft., and it will afford accommodation for 130 people. The style may be described as early pointed. There are to be triple lancets in the east and west gables with dressings of black, red, and white brick, variously disposed. The other dressings, such as large copings, &c., will be of Ballyknocken granite, and the general facing will be of hammered work of local stone. Mr. Duncan Ferguson, architect.

MISCELLANEOUS.

A block of splendid limestone was cut on the 26th ult. from the quarries of Messrs. Fitzgerald and Smyth, Carrigaerump, near Rostellan. It measures 30 feet in length, 22 feet in width, and 7 feet in thickness, contains 4,620 cubic feet of stone, and it is the enormous weight of 355 tons.

At the drawing of the Dublin Art Union some amusement was caused when the winner of No. 4 was declared, as it was found by an entry in the book that two ladies had clubbed half-a-crown each to purchase the ticket, and what heightened the ludicrousness of the incident was on No. 4 being found to be a picture entitled "Old Birds not to be caught with Chaff," painted by Mr. M. A. Hayes, and value for £50.

There were 107 candidates for the situation of resident engineer to the Belfast new waterworks. Mr. G. R. Clarke, C.E., Strandmillis, was appointed.

The tower of a picturesque old Irish abbey named Lisnaghlin, situated about three miles from Tarbert, has fallen from its foundation. The tower having withstood many a rough blast for over four hundred years (the abbey having been built in the early part of the fifteenth century), it is somewhat remarkable that it should have fallen, the night being very calm and the masonry appearing to be quite perfect. The coastguards had been practising on Scatterry Island, distant about 4 miles, on an 84-pounder cannon, and it is supposed by some that the concussion of the atmosphere caused by the firing shook the foundation.

One of the peal of eight bells in Derry Cathedral having been for a considerable time cracked, it has now been re-cast by Messrs. John Warner and Sons, Cripplegate, London. The note of the new bell is C, and it has been cast in exact harmony with the other bells. It has on it the following inscription:—"Gloria in Excelsis Deo." This bell was re-cast by the liberality of the Hon. the Irish Society of London. Wm. Anderson Rose, Governor. 1865." The chiming apparatus invented by Messrs. Warner has also been added, by which all the bells can be chimed by one man. The principle is that of a barrel organ or a musical snuff-box. The machine can be turned quite easily by a boy, and does not fatigue so much as the ringing of one bell. It is, moreover, so arranged as not to interfere with the ordinary ringing of the bells.

St. Thomas's Church, Dublin, was re-opened on Sunday, the 4th inst., after renovation.

The *Saturday Review*, in an article on the prevalent excitement about casuals, which it attributes to a desire for sensational amusement combined with a genuine philanthropic feeling, endorses the suggestion we have repeatedly made as to the true course to be taken. If these amateur friends of the destitute and needy really want to do some good to their involuntary clients, why do they not take municipal and parochial offices? Instead of dwelling solely on the sensational and dramatic aspect of destitution, why do they not turn to its business and practical aspect? Let them become guardians and overseers, and act as assessors to the relieving officers and masters of work-houses. But this would be so dull and uninteresting. There would be nothing picturesque or dramatic or flashy heroic in fighting over accounts with sordid and narrow-minded shopkeepers, or in remonstrating with parochial churls. There would be no appalling stories of misery and horror to relate to admiring friends at dinner, with the narrator playing the part of delivering angel. Such attempts, on the part of the well-to-do people with leisure, to rescue the poor from those who are only a shade less poor than themselves, would be unspeakably useful. But it would require a genuine sacrifice, and this would spoil all the pleasure of the pursuit. What is wanted is humanity made easy.—*Pall Mall Gazette*.

Mr. Hartley, C.E., Newcastle-on-Tyne, has inspected the Belfast new docks, now in course of construction. The result of his examination was that the docks were being safely built, and he recommended that special attention should be paid to the quality of the filling-up stuff behind, as this matter was of more importance than extraordinary thickness of the walls.

The tenders for the improvements in Londonderry county court-house were:—John M'Carter, £1,850; Robert Ferguson, £1,826; Mathew M'Clelland, £1,773. Mr. M'Clelland's tender was accepted.


For the improvements in Donegal County Court-house, the tender of Mr. Bratten, of Letterkenny, being the lowest, was accepted, the amount being £673.

Hampton Court costs over £9,000 a-year to keep it in order. Kensington Gardens take £5,000; Battersea Park, £7,400; Regent's Park, £7,300; St. James's Green, and Hyde Parks, £26,600. The most expensive of all is Kew, which costs over £20,000.—*Court Journal*.

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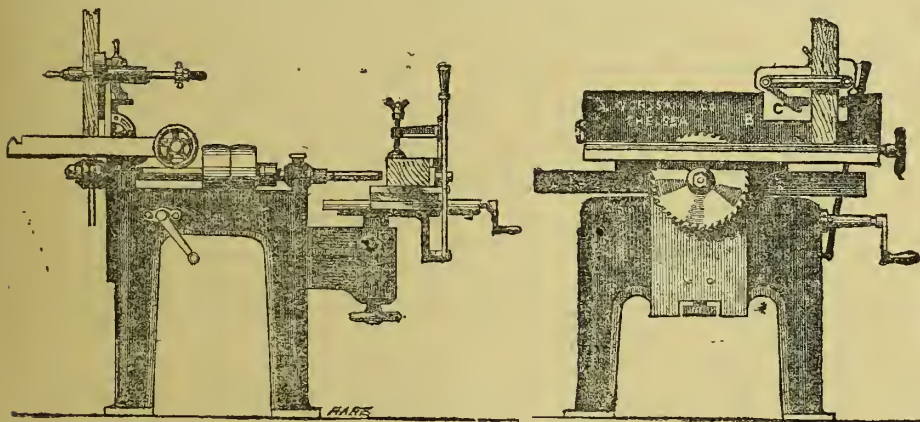
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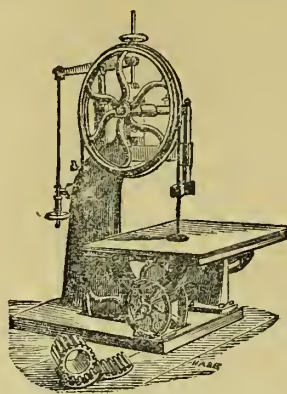
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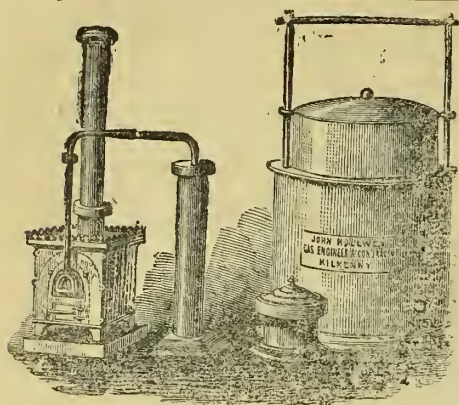
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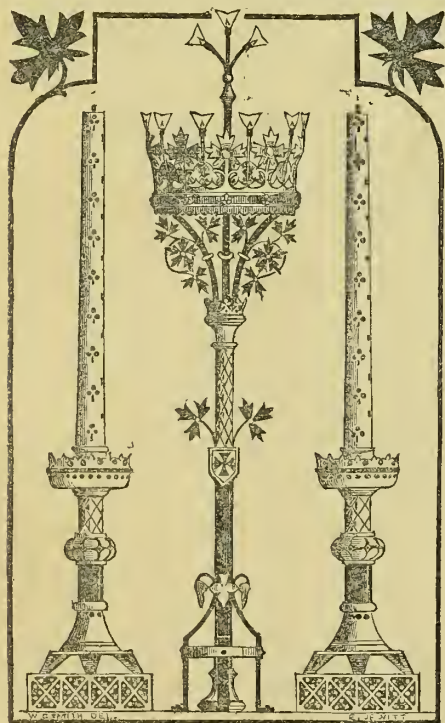
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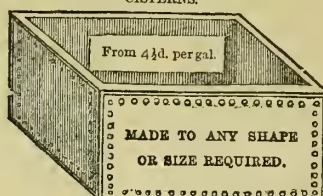
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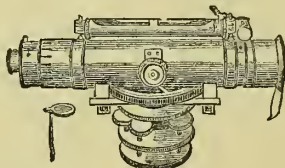
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MESSRS. EARLEY AND POWELLS beg to announce that Messrs. John Hardman and Co., of No. 1, Upper Camden-street, have resigned the business of Artists, Sculptors, Church Painters, and Metal Workers, in their favour.

Earley and Powells have added to the above mentioned business the Painting and Staining of Windows for ecclesiastical and domestic buildings, under the management of Mr. Henry Powell, who conducted the Stained Glass Department of J. H. and Co., Birmingham for many years.
Mr. Thomas Earley is the only Church Decorator living who was taught his profession by the late A. Welby Pugin.
E. and P. being thoroughly practical men in each Department, are enabled to supply real artistic work at a moderate cost. They, therefore, respectfully solicit the patronage of the Clergy and Gentry of Ireland.

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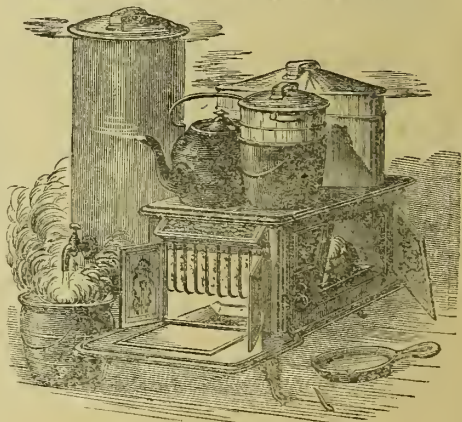
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APRIL 1, 1866.

1st & 15th
OF EACH MONTH.

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—DIAGRAMS EXPLANATORY OF MR. J. H. OWEN'S PAPER.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND, 212, GREAT BRUNSWICK-STREET. SESSION 1865-6.

THE PRESIDENT'S PRIZE OF £10, to be open to Competition by Students of the Institute or Members of the Class for Architectural Study. The subject to be a Villa, to cost not more than £2,000 nor less than £1,800, computed at 6d. per cubic foot measuring from the ground line to the upper side of wall-plate of roof. The computation to be stated on the Drawings. The Drawings to consist of plans of each floor, an elevation of each front, two sections, and at least one perspective. Scale, 8 feet to an inch. All Drawings to be figured both as to general dimensions and scantlings. An outline specification to accompany the plans. The Drawings to be prepared for hanging. The Drawings and Papers to be sent to the Assistant Secretary on or before the 1st day of June next, under the competitor's own name.

The decision of the prize will be made at the regular meeting of the Institute on the 21st of June, 1866, which will be specially summoned for that purpose. The judges will be three Fellows of the Institute named by the Council, who will be requested to take into consideration the experience and standing of the competitors, as well as the relative merits of the designs themselves. In case of no design of sufficiently high merit being sent forward, the Council reserve the power of withholding or dividing the prize; and should an unsuccessful design exhibit proofs of great merit, the author thereof will be awarded one of the medals of the Institute. The judges will report to the Council on each design submitted in competition. By Order.

JAMES H. OWEN, M.A., Hon. Sec.

Dublin, February 24th, 1866.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND, 212, GREAT BRUNSWICK-STREET. SESSION 1865-6.

The Council give notice that they will award the Fitzgerald Silver Medal for the best Set of Drawings from measurement of the ancient Church of St. Andoan, Conn Market, Dublin. The Competition is open only to the Fellows, Students, and Associates of the Institute, and to members of the Class for Architectural Study. Drawings to be to a scale of eight feet to one inch. Note-books containing the original sketches and measurements to be sent in as a test of accuracy, and will be returned to their respective owners.

Drawings to be sent in before the first meeting of the Session 1866-67 (November 15th, 1866), addressed to the Assistant Secretary. By Order.

JAMES H. OWEN, M.A., Hon. Sec.

10th March, 1866.

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TO ARCHITECTS AND GENTLEMEN HAVING MAN-
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HOGAN and SONS, Stucco Plasterers, General Cement Workers, Modellers, &c., 168, GREAT BRUNSWICK-STREET, DUBLIN, beg leave to state that they are prepared to undertake Contracts in the above line. Ornaments for Cornices & Centre-Pieces for Ceilings supplied. FRONTS of HOUSES done in Portland or Roman Cement. Materials supplied.

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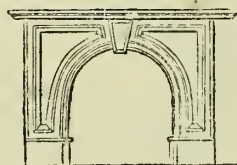
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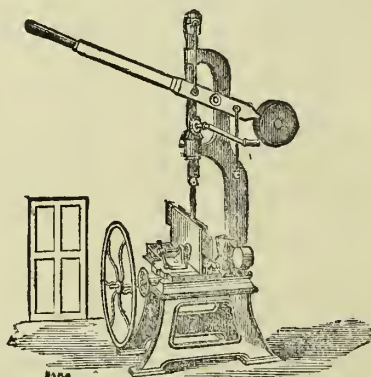
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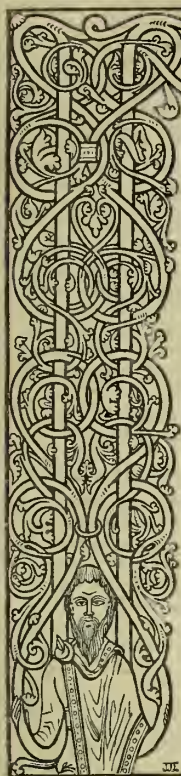
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The Dublin Builder.

VOL. VIII.—No. 151.

THE BUILDING TRADE IN IRELAND.



It is, we suppose, only a natural fruit of our own selfishness that however prudent and far-seeing we may be in the management of our affairs as individuals, looking carefully to every contingency and providing against it, in communities we only begin to adopt similar measures under the pressure of some misfortune which teaches us the lesson of a common danger. Let us use an apt illustration. Each of us who is an householder looks carefully night after night to his own bolts and bars—to that chain upon the front door and the bolt upon the back one—but it is only after the escape of a great criminal that we citizens begin to replace a

worthless set of worn-out contrivances for keeping doors shut in our common prisons with good and sufficient locks. The best of all peace, we are often told, is to be prepared for war, and we may add that the gentleman who first in time of peace talked of turning his sword into a ploughshare invented a very fine and foolish figure of speech. At present it may be said the relations of the building trade of Ireland to its employers and its own employés is satisfactorily peaceful, but nevertheless, we venture to say, it is no unsuitable time to direct attention to what is a frequent theme of comment in outside circles—the languishing vitality of co-operation among our builders. That a Builders' Association exists in name at least, we are aware, but that it is doing much for itself, or making itself heard or felt to any extent, we venture to doubt. A hint should be taken from the action of the building trade on the other side of the channel. Called into vitality by the pressing calamity of a great strike, the Builders' Association of England and Scotland has gone on in the past year steadily extending its branches, and is now engaged in a time of profound peace in discussing and endeavouring to bring to a settlement such vexed questions as the hour-system, the settlement of building disputes of all kinds, and the relations, legal and personal that should relatively exist between builders, architects, and their employers. And we may ask, is the Irish building trade in such an exceptionally happy position that it has nothing to reform? There is one fact which is perhaps indisputable, that the price of building in Dublin is higher to a certain extent than in the provinces, and

higher by a very large percentage than on the other side of the channel, and there is a notion prevalent not without reason, that builders' profits are exceptionally low. There is no reason why imported timber should of necessity be dearer in the port of Dublin than elsewhere, native materials of every kind and sufficient for our purposes are neither rare nor costly, skilled labour—nominally at least—is not paid higher, while unskilled labour is comparatively cheap, and yet we are told this state of things exists. If it is so, it is not only a reflection on the intelligence of the builders to a certain extent, but a serious misfortune to everyone connected with the trade inasmuch as it acts as a heavy check on the progress of building in the country. Should not this be investigated? There is no disguising the truth that rightly or wrongly the great majority of builders if they spoke their sentiments would ascribe this to their relations with the trades' unions and the discrepancy which they conceive to exist between a fair day's work and a fair day's wages. If this has any grounds of truth we may well ask why should it be so. We are no enemies to trades' unions in their proper sphere, nor of combination, using the word in its best sense. On the contrary we regard all class-combinations as in a certain measure an inevitable and wholesome state of society, but if the novel power wielded by any united body is pushed to excess and becomes in any degree tyrannical to the rest of the community, it should be met with opposition friendly and considerate if possible; at the same time under any circumstances powerful combinations such as we have to deal with, can only effectually be met by counter-combination. It is now when the building trades are disturbed by no angry contests and no prejudiced feeling exists, that a wise and considerate understanding between employers and employed could best be arrived at. Let it be believed, we are too poor here to be able to afford revolutions or civil wars of any kind, and we walk upon smouldering fires. If builders wait for a slack season to dictate arbitrary terms to workmen, or workmen for a prosperous one to push their acknowledged power to extremes the result would be equally disastrous to both. Is this not worth attention? To the great credit of the builders of Dublin we can claim for them a most exceptional position among their brethren. There exists among them such a spirit of emulation to gain a character for good honest work as the contract system can show in no other locality. In cases we could easily quote it goes to extremes. The penny-wise and griping system of slop-work which is the normal condition of the trade in many places is rare among us. Builders from other places are ready to sneer at our work being too well done. We can only say long may it continue to be so—with due discretion—but let us have it at a price not greater than good work elsewhere.

Again, we would ask, are the relations between architects and builders all that could be desired? Are there not many of the well-established stipulations of specifications and building agreements which call loudly for reformation? A great many architects and a few builders will perhaps say that it is not so, but we must put to them both this unpleasant question: is it, or is it not the fact that a contract will not unfrequently be taken at a lower rate under one architect than under an-

other, according as the architect bears a reputation for considerate and unprejudiced dealing with contractors? Is this as it should be? Should we not try to arrive at such a state of well-understood and distinct agreement between the parties to a contract that calculation on contingencies such as this should be quite out of the question?

Is the question of giving security for the performance of contracts in a satisfactorily understood position? What about the stock clause in specifications which makes the architect sole interpreter of the meaning of his own plans and specification? What, in fact, about the many little places where the shoe is daily found to pinch, and which every builder well knows? We are great sticklers for the rights and immunities of architects, but labour at the same time under the possibly erroneous delusion that builders have some rights to be respected too, and that architects were not sent into the world to be the natural antidote to builders as detectives are to pickpockets.

Again, if we might venture on such delicate ground, what about our relations with the building surveyors? Is their position, their practice, and scale of payment as uniform as the most fastidious taste could desire? Are their exact duties and responsibilities as clearly defined as a little discussion of the question might render them? We need say no more.

In the good old times a trade generally, and with some reason, went by the name of a mystery, a name now forgotten, and lingering only in apprentices' indentures, and the system of exclusiveness which gave rise to the name is well-nigh exploded also. A little traditional remnant of the mystery system appears to us to linger still about the building trade. There is little real interchange of knowledge, and imperfect union among its members, under a generally prevailing idea that their individual interests are of necessity in some points antagonistic. We would refer them, as an analogous case, in refutation of this, to the success which has attended the healthy combination of the architects in their Institute. With regard to them we venture to say their altered relations have injured the practice of no one individual; good fellowship has increased; a higher standard of professional etiquette set up, and acted up to; and the weight and influence of architects, collectively and individually, have been increased.

The real truth of the case appears to us to be that a Builders' Association, when it has disposed of all its present grievances, is liable to fall into disorganization from want of occupation, and consequently when an emergency arises to have no staff and organization to deal with it. The remedy for this we would suggest is a simple one, and would, it appears to us be killing two birds with one stone. Let the builders provide themselves with some permanent object of solicitude which will ensure their periodical meeting together, such as a Builders' Benevolent Institution, a Builders' Orphan School, Builders' Almshouses, or something of the kind. Let the object be something of a popular and attractive character, which will keep interest alive; as, for instance, is accomplished by the Masonic Orphan School. If it led to little annual social celebrations—a builders' dinner, or, perhaps, in course of time, a builders' ball—

so much the better; it would be all the more likely to flourish, and good fellowship would be increased.

In those good old times, to which we have once before made reference, when a gentleman freebooter made a particularly successful foray on a neighbour's preserves and brought away much loot, he generally evinced his gratitude, and compounded with his conscience at the same time by doing something handsome in the charitable and religious way. We trust our building friends will excuse the illustration, which may in some measure be an unhappy one. Builders *do*, sometimes, on rare occasions, whatever they may tell us to the contrary, make a successful speculation—a good haul into their nets. Let them then, in the day of prosperity, when they can afford it, have some thought for the widow, the poor, and the fatherless of their own brethren. He who does so may rest assured that he lays out his money at interest where "what he lendeth it shall surely be paid to him again," and will have at the same time the satisfaction that he has helped to provide a common centre of union for himself and his brother builders.

We commend these suggestions with all diffidence, but in all earnestness, to the consideration of the building trade in Dublin, and Ireland generally.

REMUNERATIVE CHARITY—A DINNER OF THREE COURSES FOR FOURPENCE HALFPENNY.

THERE is nothing so satisfactory as to witness the triumphs of these good practical people who are steadily working out philanthropic schemes on sound commercial principles. Give the poor man a decent house over his head by all means, but first see that he has food to eat if he is to be preserved to occupy it. A dinner of three courses for fourpence halfpenny!!! and we can assure our readers, appetizing, excellently cooked, and as *promptly* served as heart or fastidious stomach of man could desire. We had the pleasure the other day of testing the truth of the flattering three-halfpenny inducements held out by the Cooking Dépôt at the North Wall. The following was the amount and particulars of our expenditure.

Select accommodation in an inner apartment, with extra prompt attendance	d.
Bason of excellent vegetable soup	1
Plate of nice boiled beef (cold) with tempting slice of fat in judicious proportion to the lean, hot potatoes, mustard, &c.	1½
Big piece of bread, containing about 54 cubic inches	1½
Plum pudding 1 ^{ere} qualite	1½
Grand total,	6d.

On the following day by way of comparison we experimented on a restaurant of a more pretentious character—we decline to state the locality. We were not permitted in the more aristocratic establishment to have the satisfaction of indulging in detailed estimates of the value of the different strata as we deposited them. We were kept waiting on an average seven minutes for each course (we did not wait as many seconds at the North Wall), we were bullied by the waiter, and not one of the articles served was better or even as good as what we had the preceding day. Grand total, including fee to uncivil waiter, 2s. 2d. To many people such a marvellously cheap entertainment is incredible. We strongly recommend them to try it, and if any one doubts that the thing pays, we refer them to the following statement from the manager of a similar establishment in Glasgow:

"The cash drawn for the year ending 31st Dec., 1865, amounted to £40,234 13s. 10½d., representing the immense number of ten millions of our ordinary penny rations. Our last annual balance, as made out by our auditor, Mr. Michael Honeyman, accountant, from 30th Jnne, 1864, to 30th June, 1865, showed a clear net profit of £886 19s. 11d., after paying all current expenses, and 5 per cent. interest upon cash advanced by Mr. Corbett, which at last-named date amounted to £8,000. The total net profit since the commencement of our operations up till the date of last balance amounted to £2,137. Upwards of

£1,400 of this amount has already been given away to the various charities of the city, and the remainder will be appropriated in a similar way. I am happy to say that our labours since the commencement of the present year have been attended with still increasing success, our receipts for the first week of the new year being £1,029 18s. 2½d., and for the first month £4,029 10s. 8d., being respectively the largest receipts we have ever had for any one week or month. As a most interesting fact, and showing how heartily our establishments are appreciated during what may be called our special New Year holidays, I may mention that on the first three days of January we had repeatedly to close the doors of several of our principal branches, being quite unable to accommodate the large number of visitors who preferred the refreshments we supplied to the attractions of the public-house. The receipts for these three days alone amounted to £721 12s.; and when I state that this involved the service and clearing of upwards of half a million of separate articles of crockery, some idea may be formed of the extent of our labours. To give a familiar illustration—if all the persons who dined in the Great Western Cooking Dépôt on these three days had been seated at one dining-table, it would have extended in one continuous line from Glasgow to Edinburgh, a distance of more than 40 miles. You will have observed that the cattle plague is engaging the serious attention of the most eminent statesmen in our country, and I need scarcely say that it has been a matter of great anxiety to myself personally. For our supply of milk alone we now require the produce of upwards of 100 cows, and I am happy to say that, up to the present date, there has not been a single case of disease in any of our dairies, situate in various parts of the country. This calamity has, however, affected us most seriously by the great advance which it has occasioned in the price of beef and all articles of dairy produce, and it will require our most careful and watchful management to avoid the necessity of increasing our prices."

THE COMPETITION FOR THE LAW COURTS, LONDON.

It is always satisfactory to find oneself on the popular side of a question when issue has been joined at an early stage when the state of feeling on a point is doubtful. Some strong opinions were expressed in this journal some time since on the unsatisfactorily limited competition for the Palace of Justice, and we are happy to observe that the weight of the country goes with the DUBLIN BUILDER, and the weight of the DUBLIN BUILDER is with the feeling of the country! Mr. Cowper and the constituted authorities have received a very palpable rap over the knuckles from a very determined House of Commons, which appears to be growing more and more impatient of Government jobbing in architectural matters every day. It was useless for Mr. Cowper to attempt to carry matters with a high hand and quote the powers conferred by the Courts of Justice Building Act passed last session. Honorable members did not quite appear to see it, and carried a pretty strong adverse expression of opinion by a majority of 101 to 70. We presume the result will be that the competition will be opened to a larger number of architects, who will receive remuneration for their trouble to some extent. The instructions, we learn, are in the form of a blue-book of some 800 pages! upwards of fifty courts of law scattered all over London will have to be visited by competing architects, and some knowledge of the practice and details of business of each obtained. When this, and acquaintance with the working of the offices of the legion of law departments connected with these courts and their proper distribution and arrangement is taken into consideration, it will be acknowledged that architects have no trifling task before them.

COMMISSION ON THE NEW COLLEGE OF SCIENCE FOR IRELAND.

THE following minute has recently been sanctioned by the Right Honourable the Lords of the Committee of Council on Education:—

My Lords consider the minute of the 21st September, 1865, by which Her Majesty's Government have decided to convert the Museum of Irish Industry into a College of Science for Ireland. As the sphere of action of this College on the basis broadly sketched out in this minute will be somewhat new and beyond the limits hitherto placed on the action of the Science and Art Department in respect of the encouragement of science, my Lords have appointed a commission to advise them on the subject.

The following noblemen and gentlemen have consented to act on this commission:—

The Right Hon. the Earl of Rosse, K.F., D.C.L., F.R.S., &c.; the Right Hon. the Lord Talbot de Malahide, F.R.S., &c.; Dr. Carpenter, M.D., F.R.S.; the Rev. B. M. Cowie, B.D.; John Fowler, Esq.,

President of the Institute of Civil Engineers; Professor Frankland, Ph.D., F.R.S.; W. H. Gregory, Esq., M.P.; Colonel Harnes, C.B., R.E.; Professor Hofmann, Ph.D., F.R.S.; Professor Huxley, F.R.S.; Professor Jukes, F.R.S.; Sir Robert Kane, F.R.S.; Myles O'Reilly, Esq., M.P.; Prof. Lyon Playfair, C.B., LL.D., F.R.S.; Lieut-Gen. Sabine, R.A., D.C.L., President of the Royal Society; Warrington W. Smyth, Esq., M.A., F.R.S.; Professor Sullivan, Ph.D.; Professor Tyndall, D.C.L., F.R.S.; Captain Donnelly, R.E., who will also act as secretary.

My Lords consider that it is desirable that the College should, on its establishment, commence with a clear and defined object, a well considered course of study, and a proper staff of professors. They therefore request the Commission to consider these subjects and report generally on the scope of the instruction to be given, the examinations for testing it, and the certificates, &c., to be awarded to successful students.

COLSTON'S HOUSE, BRISTOL.

A MEMORIAL on the subject of the preservation of the interesting mediæval buildings known as Colston's House, which were threatened with destruction, has been addressed to the Mayor of Bristol, by the Royal Institute of the Architects of Ireland. Other architectural bodies have also joined issue with the corporation, and the result, we are happy to state, has been that the whole matter has been re-considered. The corporation have advertised for plans for their new Law Courts, stipulating that Colston's house is to be preserved if possible, and they offer premiums of £100, £50, and £25.

THE HEALTH OF DUBLIN.

(From the Registrar General's Weekly Return.)

IN the Dublin Registration District the births registered during the week ending March 24, amounted to 154—82 boys and 72 girls. The deaths registered during the week were 197—93 males and 104 females. The deaths from fever were 7. There were two deaths from measles, and one from scarlatina. Six deaths were attributed to diarrhoea. One death was ascribed to diphtheria, one to "malignant sore throat," and one to "tonsillitis." There were 49 deaths from bronchitis, and six from pneumonia, or inflammation of the lungs. Phthisis or pulmonary consumption was fatal in 27 instances. Convulsions carried off 11 children. Eight deaths were the result of heart disease. Two deaths were ascribed to diseases of the liver. Inflammation of the kidneys caused one death. Seven accidental deaths were registered during the week.

The number of deaths registered in the entire of the Dublin Registration District during the week represents an annual ratio of 33 in every 1,000 of the population by the census in 1861. The deaths registered in No. 1, North City District (Summer-hill), afford an annual ratio of 19 in every 1,000 of the population—the Mater Misericordiae Hospital is situated in this district; in No. 2, North City District (Cole-raine-street), which includes the Rotundo Lying-in Hospital and Jervis-street Hospital, the deaths registered amounted to 24 per 1,000; and in No. 3, North City (Blackhall-street), to 56 per 1,000;—the North Dublin Union Workhouse, the Hardwicke and Whitworth Hospitals, and the Richmond District Lunatic Asylum, are situated in this District. In No. 1, South City District (Meath-street), which includes the South Dublin Union Workhouse, the Cork-street Fever Hospital, and Steevens' Hospital, the deaths registered afford an annual ratio of 63 per 1,000; in No. 2, South City District (High-street), the ratio was 36 per 1,000; in No. 3, South City District (Peter-street), which includes the Coombe Lying-in Hospital, and the Meath and Adelaide Hospitals, it was 30 per 1,000; and in No. 4, South City District (Grand Canal-street), in which Sir Patrick Dun's and St. Vincent's Hospitals are situated, it was 17 per 1,000. In the Suburban District of Rathmines the annual ratio was 30 per 1,000; in Donnybrook it was 28; in Blackrock, 37; and in Kingstown, 32 deaths per 1,000 of the population by the census in 1861.

At the Observatory of the Ordnance Survey Office, Phoenix Park, the mean height of the barometer during the week was 29.426 inches. The highest daily mean reading (29.848) occurred on Thursday, and the lowest (28.970) on Friday. The temperature was highest on Monday, when the thermometer registered 41.5°, and was lowest on Thursday, the mercury having fallen to 29.5°. The mean temperature during the week was 41.5° (in the corresponding week of 1864 it was 36.2°); the lowest daily mean (34.0°) occurred on Thursday, and the highest (44.7°) on Saturday. The mean of the dry bulb for the week was 42.0°; and of the wet bulb 40.3°. The mean humidity of the air during the week was .860—complete saturation being represented by 1.0. The rainfall during the week measured 1.762 inches.

ON THE CATHEDRAL OF ST. CANICE,
AND OTHER ARCHITECTURAL ANTIQUITIES, KILKENNY.*

THE Cathedral of Kilkenny being now in process of restoration, many things have been brought to light connected with its original design, which may make a short paper on the subject interesting to the Institute. In connexion with the description of the cathedral, I purpose touching briefly on the other buildings of interest which still exist in Kilkenny—ecclesiastical, military and secular.

Under the first of these heads I would enumerate the cathedral; the Augustinian Abbey of St. John the Evangelist, whose charter, in the "Monasticon," is dated 1220, founded by William Marshall, the elder, Earl of Pembroke; the Dominican Abbey, founded by William Marshall, the younger, 1225, dedicated to the blessed Trinity, commonly called the Black Abbey; the Franciscan Abbey, founded 1230; St. Mary's Church, probably finished 1328; the Vicar's Hall, near the Cathedral, and other buildings forming part of the cathedral establishment. Under the second head, the castle forms the most interesting object of attention. Under the third head, I would mention the Hospital founded by Sir Richard Shee, 1581, and several houses dating from the sixteenth century and onwards.

The Cathedral.—A full description of this beautiful and interesting structure has been given by the Rev. James Graves, in his book on the "History and Antiquities of Kilkenny," from which, and other authorities, I have made a few notes. St. Canice, to whom this church was dedicated, was a man of distinguished piety, the intimate friend of St. Columbkille, on the model of whose foundation at Iona he founded a monastery at Aghaboe, in Upper Ossory, which existed in 577. The earliest allusion to Kilkenny, in "The Four Masters," A.D. 1085, mentions that Cael Cainnagh, or the Church of Canice, was partly burnt—probably a wooden structure, which was shortly after rebuilt, and destroyed by fire 1114. After this second destruction, it appears to have been raised again, of more costly materials. Numerous carved stones, of twelfth-century work, have been found built into the walls, and under the paving of the present church; and extensive foundations at the eastern end of the cathedral indicate that a church of that period existed. In 1189, William, Earl Marshall, the elder, through a marriage with Isabella, only child of Richard FitzGilbert, Lord of Ossory, became Earl of Pembroke and Lord of Leinster. With this nobleman commences the authentic history of Kilkenny. He was appointed Governor of the Kingdom of Ossory, by Prince John, 1191—Richard I. being then in exile. He erected the castle 1192, returned to England 1194, came back to Ireland 1207, rebuilt the castle of Kilkenny, and gave a charter to the town, under which it still enjoys certain privileges. In 1202, we find the see of Ossory at Aghaboe, St. Canice's original foundation, under the prelate of Felix O. Dullany, who was succeeded by Hugh Rufus, or De Rous, an English Augustinian canon, and the first English Bishop of Ossory. This prelate exchanged the see lands of Aghaboe for others at Kilkenny, belonging to the Lord of Leinster, and probably used the church which he found on the site of the present cathedral, as it is stated "he did nothing further for his episcopal see." From manuscripts in the Ormonde Collection, we find that a cathedral existed in 1229. This may have been the ancient church of Dullany's time, or the choir of the present church, used as a cathedral prior to the completion of the structure. Bishop Hugh de Mapleton carried on the work with great vigour from 1251 to 1256, and nearly brought it to a finish. Geoffrey St. Leger, 1260, completed the cathedral, at great cost. From the foregoing remarks, it will be seen that the present structure, in its main features, was built between the years 1251 and 1260, and possibly may have been commenced before 1229. In 1332, we find that the belfry fell, breaking the side chapels. For twenty years the cathedral remained in a ruinous condition, when, in 1354, the tower was restored, the vaulting of which was put in by Bishop Hackett, 1460 (this prelate was architect of the Convent of Bathalla in Portugal). In 1338, Bishop Ledred filled the windows with beautiful stained glass, particularly the eastern ones, which represented the whole life of Our Lord. So beautiful were they that Rinnuccini, the Pope's Nuncio, who saw them in 1645, offered £700 for the stained glass, which was declined by the then prelate, David Roth. In 1650, those windows were demolished by Cromwell, who broke the monuments and "took away the great and goodly bells, and threw down the roof thereof." On the 12th of August, 1658, the Commonwealth passed "An Act for the Reparation of Churches," which does not

appear to have taken effect on the cathedral. In 1660, Bishop Williams, finding the church in this ruinous condition, commenced to repair it, expending on the choir alone £400. From this date until 1675, the cathedral underwent sundry repairs, and was supplied with a ring of four bells at a cost of £246 13s. 10d. In 1677, Bishop Parry supplied plate, value £100; and, 1756, Bishop Pocock, finding his cathedral almost totally neglected, its roof tumbling down, and its monuments broken, commenced the work of renovation, and with the assistance of his chapter placed the cathedral in the condition in which it has been handed down to us when the present restoration was commenced. The fittings of the choir put up by Bishop Pocock, being of a Grecian character, were quite at variance with the architecture of the cathedral, as were also the stucco ornaments which covered the ceiling. In 1863, the roofs were found to be much decayed, and it was then determined to restore the church, as far as possible, to its original condition.

The cathedral, which is the second in point of magnitude in Ireland, is in total length 226 feet, breadth at transept 128 feet. The chapels on either side of the choir, have given rise to various discussions as to their use; until the present alterations were commenced, the only access to these was through small doors, one opening from the north transept, the other from the Lady chapel. The removal of the old plaster on walls, disclosed the fact that these chapels were divided from the choir by large arches, with beautiful mouldings and corbels. Similar arches opened into the transepts. The fall of the tower, in 1360, carried in its ruin part of the adjoining arches and walls of choir and transepts: when the tower was rebuilt, the injured walls were carried up in solid masonry, and thus the arches alluded to were blocked up. One of the principal features in the present restoration is the rebuilding of these arches, completing their mouldings and corbels. The clerestory windows of choir, five at either side, which were also built up, are likewise being restored.

The church appears to have undergone several changes, shortly after its erection in the thirteenth century: for instance, the Lady chapel, although a beautiful specimen of Early English work, has clearly been an addition, as the wall of side chapel shows indications of a continuous arcade of arches, proving it to have been an outer wall. Almost all the windows in the cathedral have detached and filleted shafts. The east end of choir is very beautiful, having nine lights, with detached and filleted shafts, heads cusped on interior, and semicircular on exterior. The windows were originally filled with the stained glass, so much admired by the Papal Nuncio, and for which he offered so large a sum in 1660. Funds for the restoration are too limited to allow of those large windows being restored. It is, however, hoped that persons interested in the work may be induced to lend their aid to the accomplishment of this part of the restoration.

The Lady chapel, owing to defective foundations, has had to be rebuilt, the stones being numbered and used in the work. A complete arcade of arches runs round the two external walls, south and east. On the former there are nine lights, in groups of three, with three drop arches to the interior, with marble filleted pillars and carved capitals. To the east, six lights, grouped in pairs, with drop arches and pillars. This portion of the building will be used as chapter-house.

The small chapel is the parish church. This and the two side chapels have each their aumbry and piscina. On the south side of choir has been discovered the site of the sedilia: sufficient indications of the designs remain to enable it to be correctly restored. Higher up, beneath the side windows, are two recesses—the one an aumbry, the other a piscina.

The carved capitals to windows of the side chapels are interesting, as giving a certain weight to the theory put forward by Mr. Skidmore, that Early English foliage takes its type from metal work. Each capital has its foliage bound round, as it were, with a hoop. These windows are being carefully restored, no stone being cast aside which can possibly be re-used in the work. On the walls of side chapels the original decoration has been discovered—scrollwork of excellent design in black, orange, and green, running under the wall-plate, the walls covered with what may be called an ashlar pattern. It is proposed to carry out the same mode of decoration in the new work. The roofs of the side chapels owe their design to the only remains of an Early English roof I have seen in Ireland, that of Callan Church, removed some years since.

The roofs of the whole church are new, stone gutters having been used throughout, behind the parapets, which are embattled—the most usual finish for ecclesiastical buildings in Ireland; still, I am of opinion that such was not the original design, but probably dates from the fourteenth or fifteenth

century, portions of tombstones of an early date forming part of their structure. Still, they are of sufficient antiquity, and nationality in their character, to make it desirable to maintain them.

The porch is interesting as having been, in 1478, the scene of the murder of Richard, the son of Edmond Mac Richard Butler, in revenge for a similar outrage enacted thirty-five years before under his direction. The mouldings of the entrance archway are very beautiful, and busts, which are introduced in the carving, exhibit as a fastening to the cloak what is now known in Ireland as the Tara Brooch.

On removing the pavement, several patterns of ancient tiles have been discovered, some of which have been forwarded to Messrs. Minton, with a view to their reproduction. The device is generally incised, four tiles forming the complete pattern, two glazed with a black glaze and two with a red. A scale pattern has also been discovered, all red. Several stone coffins have been brought to light; and an effigy, face downwards, forming part of the modern paving, has been revealed. On opening an ancient vault, which is supposed to have belonged to the Ormonde family, a leaden coffin was discovered. The profile of the body, having been copied in lead, formed the upper portion of the coffin; the under portion is shaped in such a manner as would have fitted into the hollow of one of the stone coffins which have been dug up. In this same vault a leaden urn, supposed to contain the heart of Viscount Mountgarret, was discovered.

In examining the ruins of Ireland, it is interesting to trace the influence of a particular architect, or band of workmen, in various districts. In Kilkenny I trace the workmen who were employed at Christ Church, Dublin, and probably at Boyle Abbey—the filleted shaft and writhed angle shaft, as in north transept doorway, are to be found in all three. In Co. Galway, the tracery of altar tombs and windows evinces that the same mind was there at work, if it was not executed by the same workmen. In Waterford, again, I see the handiwork of the Kilkenny craftsmen. In mentioning this, I do not wish to infer that one thing is a servile copy of another, but that there is sufficient to lead the enquirer to the conclusion that certain men carried their art from place to place, and were esteemed for their talent in architectural construction.

The general details of Kilkenny Cathedral are much simpler than is usual in English churches, owing to the hardness of the materials employed, and limited means; but the proportions, as in most Irish churches, are very good, and the simplicity and massiveness of the work give an idea of size which elaborate tracery, and multiplicity of mouldings, would not have produced. It would prolong this paper to unreasonable limits to enter into a description of the monuments and effigies of many noble families contained in this interesting building. One curious tradition I would mention connected with the device often used on tombs in Ireland, such as the implements of Our Lord's passion, representing the cross, pincers, crown of thorns, &c., in addition to which a cock is represented flying out of a pot—the tradition being that, when Peter denied Our Lord, the cock was supposed to have been boiling in a pot, and to have got out and crowed on hearing Peter deny Our Lord.

The work of restoration has been pressed on with vigour, and it is hoped that the cathedral will be ready for service in about six months. The roofs are finished, the arches between the choir and side chapels opened, the prebends' stalls in hand; still, much remains to be done. The tower must rest in its present unfinished state until funds are collected for its completion. No pains or trouble will be spared by the dean and chapter to bring the work to a satisfactory conclusion. The chapter of St. Canice consisted of twelve members, of whom the dean, archdeacon, chanter, chancellor, treasurer, and two prebends had manse houses surrounding the cathedral, the dean for the time being lord of the manor of the glebe. The vicars choral were a very ancient corporation, liberally endowed by Bishop St. Ledger, 1260, who gave them his manse and lodging. The vicars had a common hall and separate cells, read at meals, but were silent at other times, which shows the monastic character of the institution. The community consisted of four vicars (who were obliged to be priests), four stipendiaries, and four choristers. When a vacancy in the vicars occurred by the death of a vicar, the senior chorister, on being made a priest, filled his place. Considerable portions of the common hall still exist, particularly the gable end, which has a very interesting window.

At the north-west angle of the Cathedral—close is the library, founded by Bishop Otway, 1676. In mentioning the mode in which his bequest was to be expended, he enumerates "claims for every particular book." At the eastern corner of the south transept stands one of the round towers almost pe-

* Read at the Ordinary General Meeting of the Royal Institute of British Architects, by T. Newenham Deane, Fellow, February 12th, 1866.

culiar to Ireland, and so ahly written on by the celebrated antiquarian, Dr. Petrie, whose theory that they are of Christian origin is, in my opinion, thoroughly borne out by the following facts. The tower, which is one hundred feet in height, was filled to a considerable depth with accumulated rubbish, principally the deposit of birds. This was removed, and on digging two feet below the outside level, human remains were discovered, contained in wooden coffins, placed partly under the foundations. The tower must have been erected on, or nearly on, the surface of the ground, which ground must have been a place of burial previous to its erection; and the position of the remains, with reference to the points of the compass, indicates that they were those of Christians. It is curious that a structure of such height, and small base, should have stood so well, resting on such a foundation.

Priory of St. John.—The oldest monastic foundation in Kilkenny is the Priory of St. John, founded by William Marshall, the elder, Earl of Pembroke. In 1645, when the abbey of Ireland were everywhere being restored, the Augustinians claimed their abbey; but the Jesuits, being the more powerful body, opposed the claim, and were confirmed in their occupation by Rinnuccini, the Pope's Nuncio. Dr. Ledwich states that a portion of the abbey was pulled down to make room for an infantry barrack. Sufficient, however, remains to show much of its original extent and beauty. Fifty-four feet of south side of choir is a continuous arcade of lancet windows, the largest pier being only nine inches wide. It is to be regretted that, in converting this ruin into a modern church, the windows have been cut down, especially the eastern one, and every second light stopped up. These ruins contain several monuments and effigies of great interest. The design of the chapter-house at the cathedral was taken, evidently, from the choir of St. John's.

The Franciscan Abbey, situated among orchards near the river, exhibits some interesting details. The east end is lighted by five lancets. The choir and tower of this abbey alone remain.

The Dominican Abbey.—The Dominican or Black Abbey, founded by William Marshall, the younger, 1225, has lately been restored by J. J. MacCarthy, Esq., architect. It is interesting as showing how the simple form of the Dominican or Franciscan churches were added to, the most usual shape being two parallelograms, nave, and choir, sometimes with a narrow tower between. Frequently this tower is an addition. In the present instance, the usual addition of the two chantries has been extended to aisled transept and nave. The top of the tower is a particularly good specimen of crenellated battlement and truncated roof.

St. Mary's has little of its original architecture worth describing; the church has been completely modernized. Surrounding the church are several tombs of great interest, principally of the fifteenth and sixteenth century, belonging to the families of Archer and Shee.

The Castle, the seat of the noble family of Ormonde, is beautifully situated overhanging the river. The plan originally consisted of four towers, with curtain walls between them, the entrance in the centre of eastern side, where lately the foundations of two minor towers were discovered. The walls are, in some parts, eleven feet thick. The vaulting on lower story has been turned on wattle centres, which never were removed; in some parts the basket work still adheres to the mortar above it. The several alterations which the castle has undergone, to adapt it to modern use, have, as usual, obliterated much of the ancient character. Within the last few years considerable changes have been carried out, under my advice. The picture gallery is a fine apartment, 146 feet long by 28 feet wide, which, together with the rest of the castle, has had to be re-roofed. The painting of the gallery was entrusted to J. H. Pollen, Esq., who has been most successful in producing a beautiful work. The muniment room contains documents of the most valuable nature, which it is hoped may yet come before the public in some form of publication. It has taken many years to arrange these papers. The task was committed to the Rev. J. Graves, who has entered into the matter with all his heart.

The Hospital of Sir Richard Shee was founded in 1581 for the maintenance of thirteen poor people. The lands connected with this endowment have passed to others. The building, although in a very dilapidated condition, gives accommodation to several old women (who are fast dying away). It is not the intention of the present proprietor, N. P. O. Shee, Esq., to fill the vacancies until steps have been taken to repair the hospital, and place it on a better footing.

Throughout the town are many old houses of a domestic character which will interest the architect; and the surrounding country is full of buildings which will amply repay for the trouble of a visit—of which I may mention Kells, Jerpoint, Freshford,

Thomastown, Gowran, Dunbrody, and, by extending a tour a little, Cashel and Holy Cross, &c. &c.

In the discussion which followed, Mr. G. E. Street, vice-president, expressed his regret at the absence of Mr. Deane, because he, for one, would have been glad to have asked a few questions of the author of the paper. It was some years since he had himself seen this cathedral, and his stay in Kilkenny was not a long one. He had not been aware of the subject of the paper until late that afternoon; but, as he felt extremely interested in Kilkenny Cathedral, he made a point of attending to hear Mr. Deane's paper upon it. It was interesting, in the first place, as being a charming example of a cathedral on a small scale—very small indeed if compared with most of those in England. At the same time, it had a cathedral air, and was just such a structure as one might suppose would be adapted to our colonies in the present day. It was not on a scale that would be satisfactory in this country; for in size it was not larger than many of our large parish churches, though possessing considerable dignity and effect. Perhaps the most interesting point in connection with this cathedral was its thoroughly English style of architecture throughout, with the single exception of the parapets, which are all of the peculiar design which was so universal a characteristic of later Irish architecture; and he agreed with Mr. Deane, in the present instance, that they must have been an addition to the original structure. He had no doubt it was designed originally without a parapet, the roofs being of a very lofty pitch. The roof shown in the photograph was not of the original pitch, which resembled much more that which was shown on the aisles; and he imagined it must be intended to raise the new roofs to the old pitch. The same character of work would be found in other churches and buildings in the same district, particularly at Cashel and Ferns Castle (excluding, of course, from the former the most interesting, but thoroughly Irish, Cormac's Chapel); and, from his examination of the work, he had come to the conclusion that the architect who built Kilkenny Cathedral came either from South Wales or Somersetshire, for he had traced the works of the same architect on both sides of the Bristol Channel. The western part of the church was extremely simple in design, the arches being of the plainest kind, well proportioned, but simple almost to severity. The western window was a lofty triplet; and at the bottom, over the western door, there was a curious sort of two-light window inserted, which it was difficult to account for, except as a freak of the architect. He noticed in all the work of this part of Ireland a great love of the trefoil and quatrefoil, the inside arches, even of many of the windows, being trefoiled. The clerestory was remarkable: the windows were quatrefoil openings, and, if he remembered aright, over the columns, and not over the arches. The same arrangement is to be seen at Jerpoint Abbey, at a slightly earlier date, and it was not uncommon in English works. There was, also, another curious feature in this cathedral—that was, the mixture of two-coloured stones. He believed Caen stone was used when white stone was required, and the native dark limestone elsewhere. In the west door arch, there were alternate voussours of Caen stone and limestone, and the filling-in of the top of the doorway was a delicate carving enclosed in a quatrefoil. The shafts in the eastern part of the church were of Kilkenny grey marble, and generally very delicate in their proportions. He was very glad to find that one of the most unsightly things he ever saw—viz., a great wall which divided the tower from the chancel—was already destroyed. It was, when he last saw it, the most doleful church conceivable; and, to make it more doleful, there was a churchyard wall from ten to fifteen feet high, over which he supposed the poor Irish were expected to climb, in order to get even a sight of the cathedral! As to the steeple, that was said to have fallen in 1332; but it was only as far as the belfry, he believed, that it fell. There was no drawing which showed the present character of it; but his impression was that only the upper part of the steeple fell, and then the steeple was finished with the Irish battlement and groined. Reference had been made to the church at Batalha, said to have been built by the same architect in 1360. The groining here, like all the other Irish work of the same date, had a great deal of foreign character about it; but he had not seen Batalha, and could not say how far there was any evidence of similarity of character. Perhaps the most striking part of the church was the transept, which was very long, with lofty lancet windows on the side and end walls, and a very picturesque staircase turret on the west of the south transept. Altogether, he knew but few churches which, though so small and so simple in style, had struck him as being so valuable. From some of the dimensions he had in his possession, he had made one or two notes, which would be interesting to those who were

curious in the proportions of these old structures. The columns in the nave were 21 ft. from centre to centre east and west, and 31 ft. 4 in. from north and south, and 10 ft. 4 in. high, so that the height was about half of the dimensions from centre to centre east and west, and one-third that north and south; and triangles inscribed on their bases seemed to give the height. He noticed that there was a great deal of dog-tooth throughout the eastern part of the church, and where there was any moulding it was extremely good of its kind. It was evidently done by workmen who were imported for the purpose. His own impression was that the battlemented work was done at the time of the repairs by Bishop Williams in 1660; but those more conversant with the earlier work might be able to say more about it. At Waterford he did not remember seeing marks of the same workmen, referred to by Mr. Deane, but his own evidence in that respect was of a negative character. There were two or three other churches mentioned in Mr. Deane's paper, on which he would just touch. The Dominican abbey, commonly called the Black Abbey, which had a tower placed on the south of the altar in the most singular way: it had a rather fine fourteenth-century window at the west end. The plan of that church was extremely odd, and had evidently been obtained by adding to from time to time. It contained several very fine gravestones. Another church which interested him much was the Franciscan church, where the tower was placed at the east end of the nave, with a chancel at the end. The tower was much narrower than the nave, but exactly the width of the lofty arch which supports it, so that, now that the roof was gone, the construction looked extremely bold and hazardous. The windows in this church were extremely good. In conclusion, he remarked that the town of Kilkenny was one of the most interesting in Ireland, and would amply repay the visit of any architect in quest of good work. He believed, as he had said, that most of it was done by Englishmen, and it was therefore the more reasonable that English architects should go to look at it; whilst, in addition to it, many works of great interest were to be met with, at Jerpoint, Cashel, and elsewhere in the same district. In fact, there was such a store of works that the only wonder was they had not been more studied by English architects than they had apparently been hitherto.

Mr. Gordon M. Hills, Associate, remarked that the chairman had filled up all that could well be said upon this church, and he had touched on most of its peculiarities. Kilkenny Cathedral might be taken as about the third in rank of the Irish cathedrals. Limerick cathedral was one which he considered remarkably grand in effect, notwithstanding the extreme simplicity of its architecture. In plan it is a cross church, enlarged into almost a square form by additions outside of the aisles, and which, moreover, are raised so high as to cover the original clerestory. As to the observation of the author of the paper with respect to the band of workmen whom he supposed to have travelled in the execution of these works, he did not think there was any good foundation for that supposition. His own belief was that Cormac's Church, at Cashel, consecrated in 1135, was the last important work of fixed date of the Irish before the English invasion. After that, there were two influences which produced another style. The first was the introduction, in 1148, of the Cistercian order of monks, and the first building erected by them was that of Mellifont Abbey, which, it is authentically known, astonished the people by its superior pretensions over what they had been accustomed to see. At Mellifont there are not now any remains of that work, though there is much that is curious of later date. The next work of the Cistercians of which they had an account was Boyle Abbey, much of which still remains in good order; and Cistercian work of about the same era is still to be seen at Jerpoint Abbey, Baltinglas, Manistex, near Croome, and other places. Boyle was referred to by Mr. Deane, and was executed by the Cistercians, and not, he (Mr. Hills) would conceive, by those who erected Kilkenny Cathedral, the latter structure having been built under the influence of the English invaders; and, as the invaders came from South Wales, it was not to be wondered that there was a resemblance between their works in Ireland and those found in South Wales. The banded shafts were remarkable, and they were found in many parts both of Ireland and England. Perhaps the most remarkable example in England was that at Walsoken, near Wisbeach, where the chancel arch has four small shafts in each pier, all banded five or six times in this manner. There were other instances of the kind in England, but that at Walsoken was additionally striking from its greater antiquity than any of the Irish examples. [The chairman: Romanesque, like St. Alban's.] The Franciscan friary was one of a numerous class. He could mention, probably with ease, fifty towers which were erected in the way the chairman had

described. The fact was, except the round towers—which ceased to be built when the English went to Ireland—and the low Cistercian towers, the Irish churches up to that period were almost towerless. In a few instances other towers could be named, as the fine massive one of the Trinitarian Friary at Adare; but suddenly, in the fifteenth century, it became the practice to build to the Franciscan and Dominican structures these lofty, slender structures. The nave was shut out from the choir by two transverse walls, placed close together, and pierced each with a narrow arch. Above the arches rose the slender tower, standing, as it were, on the apex of the gables, instead of spreading over the width of the nave. He remembered Professor Donaldson drawing attention to one of those towers at the Magdalen Tower at Drogheda, the remnant of a Franciscan or Dominican church: there were also two at Adare, one at Kilmallock, and at Rosserick, Moyne, Clonmines, Quin, and many other examples might be adduced. He thought, with respect to these peculiar Irish battlemented parapets, there was no doubt that at Kilkenny was of late date. And undoubtedly many other instances were equally late. The earlier method at Kilkenny it was not easy to determine, for, if a different method had existed, it had, so far as he knew, all been superseded elsewhere by this of late date. The people lived in the midst of war to a comparatively modern period, and it was always necessary to have and to renew means of protection round the building, which these parapets afforded, and which were not necessary for the same objects in this country.

Mr. J. P. Seddon, Hon. Sec., said that the plan of Kilkenny Cathedral was almost identical with that of the Priory Church at Brecon, and that there were many other buildings in Wales very similar in character to those that had been described, possessing the same simplicity of detail and general proportions; and the banded columns and roll mouldings to which Mr. Deane had called attention as a feature in these Irish churches, found their counterpart at Margam Abbey in Glamorganshire, the west front of which, though sadly modernised, still possessed a fine triplet of windows, and doorway below banded in this peculiar manner. Another most interesting example of the kind existed at Strata Florida Abbey, in Mid-Wales: this was so very beautiful that it was worth making a pilgrimage to. It was called the Crozier Arch, from the fact that the several zones or bands of the arch were continued on the face of the wall in the semblance of croziers exquisitely carved, in the character of the Transitional style, between the Norman and Early English, so highly characteristic of the western counties. In reply to a remark by Professor Donaldson, as to the entire absence of figure sculpture in these early works, the decorations being entirely confined to architectural sculpture only, Mr. Seddon mentioned that at Kidwelly Church, in South Wales, between Carnarvon and Llanelly—which was a very fine structure, with a noble spire—over the archway in the porch to the nave he had lately seen a beautiful and most interesting statue of the Virgin and Child, sadly broken and dilapidated, and resembling the well-known early French type; yet, nevertheless, it was doubtless true that figure sculpture was rare.

Mr. William White, Fellow, had seen many of these works which had been referred to, and it was to be regretted that they were not more visited than they appeared to be. He would add one word to what the Chairman had said as to the beauty of these Irish memorials. It was to be remarked that, with all their simplicity, most of the Irish structures of that date exhibited a wonderful grace of proportion, more so than many of our own works, and they were equally remarkable for that exceeding simplicity. He apprehended, however, that the chairman more especially referred to the geometrical proportions of the buildings. Several of the earlier buildings in Ireland, which exhibited the greatest beauty of proportion, appeared to have followed accurately several of the proportions used in their earlier and ruder works. And these proportions were of a somewhat remarkable character, produced in a way that could not possibly have been accidental, and could have come only from their following a definite system. He had, from the study of these remains, arrived at certainties on several points which had been of interest and value to himself. But he wished to say one word with reference to the parapets. It appeared to him that this building was originally designed to have a parapet. The character of the whole work appeared to him very much as if this was intended, although, from a slight difference perceptible in the work, it was probable they had been rebuilt. But he did not think they were wholly additions. What these had been there was nothing to show; but he had seen a number of instances of the Irish form of parapet which seemed to him as early, and in some cases almost earlier, than the date of the building on which this particular parapet was found.

The chairman remarked that there was the old corbel table at the bottom of the parapet.

Mr. Hills repeated his impression that it was a modern parapet.

The chairman added that there was not a bit of old stone in it; it was made up of plaster.

Professor Donaldson then proposed a vote of thanks to Mr. Deane for his paper.

Mr. Thomas Morris, Associate, said he had listened with great pleasure to the reading and discussion of this paper. It afforded, he thought, an allowable opportunity of remarking that the recent publication of their new catalogue revealed many deficiencies in their library. Amongst them might be mentioned, as particularly relevant to this subject, the late Dr. Petrie's work on the "Ecclesiastical Antiquities of Ireland." It was a work of great learning and value; and, although the "Round Towers" formed the staple subject, it went largely into general questions of ecclesiastical architecture. They had lost Dr. Petrie himself, but it was not perhaps too late to obtain a copy of his very serviceable and finely-illustrated book. He hoped, at some time or other, his theory of the round towers would be overturned; but he thought, nevertheless, the work was one of great value, and would be very useful in the library of the Institute.

POOR TOMMY MOORE AND THE VANDALS.

AFTER our observations, not stronger than were deserved, on the desecration of Moore's house in Aungier-street a month since, the enterprising proprietor, who is, we learn, a Mr. Hely, proceeded to remove the bust of the poet from its time-honoured niche, actuated, we rather imagine, more by spite towards the offended public than anything else. We have the authority of a correspondent of *Saunders' Newsletter, Civis*, that he saw the niche actually built up; however, finding public opinion rather too strong to be provoked on the establishment of a new grocery business we presume, Mr. Hely has since restored the niche and the poet, and denies that he ever intended the hard whom he adored to rest in the shade. So far his statement and that of *Civis* may fairly be weighed against each other for credit. Mr. Hely and his builder may restore the bust, but they can never give us back that dear old gable, and they may as well save themselves the trouble of defending themselves.

The transaction has produced a host of good, bad, and indifferent epigrams and letters in the newspapers, from which the following may be selected as favorable specimens:—

TOM MOORE'S BUST RESTORED.

O mighty magic of the pen,
The Poet's in his place again!
The poet's bust is seen once more
Above the old paternal door.
Once more the Poet's pleasant face,
Like sunshine in a shady place,
Looks from its nook triumphant down,
And casts a glory o'er the town.
Thanks, owner of the dear old house—
You show your taste, you show your nous,
Many who came to you before
For much, henceforth will come for Moore,
With sparkling glasses brimming o'er,
Gay revellers will ask for Moore,
And, grown poetic while they cram,
Drink to the *Dram-a in a-dram!*
Your sign, "The Poet's Bust"—be long;
Quote not your prices, but his song.
Give your dark port a Moorish look,
Call your best liquor "Lalla Rookh!"
Let all that's sweet, and soft, and bland,
Be branded with the "Bessie" brand.
Call your champagne (and all will buy)
"Sparkles from Nora Creina's eye."
Let "hock" be *hœc* for "Nea's sake,"
"Old Tom" be young, and no mistake.
Mix "Little" in your cask's strong tide,
In things of weight leave crib aside.
Of these th' admiring world will judge,
And deem your rivals' puffs but "Fudge."

March 24, 1866.

THOMAS BROWN THE YOUNGEST.

WHAT HAS BECOME OF IT?

To the Editor of *Saunders' Newsletter*.

SIR,—Oh, blame not the bard if I revisit for a while the "glimpses of the moon," to send a communication expressive of my thanks, that, through the influence of the press, my bust has been restored to the niche in front of the old house in which I was born, just under the little room in which I so often read my lesson for my dear mother at two in the morning. As I was conscious that I had been taken down a peg for a day or two, I was rather irritated at the apparent slight shown me; but 'tis sweet to think that one has a friend upon earth who will stand to you in the hour of need, when people seem inclined to lower you in the world. My attention was directed to the fact by Apollo, who was reading at the time a

copy of your journal; he drew my attention to the letter of a "Citizen," and of "Thomas Brown the Youngest," for whose witty verses I am grateful. Though the bard to purer realms has soared, he wishes to be remembered in dear old Aungier street, and is glad to be able to announce that when the young May moon is beaming, and ladies' eyes are looking towards the stars, he may be again seen in the niche, for this very day the workmen placed me back again, shining and polished, as the Countess of Moira always thought me. I have got what poets seldom get, a new coat, and shall be handed down to posterity by being elevated higher than I thought the present possessor of the old house at home would have permitted me to be. It was really nectar to my feelings to know that some kind heart, when he missed me from my accustomed place, like the unfortunate youth in Gray's Elegy, murmured, in type, "I wish he were here." I listened with great satisfaction to the cordial satire of "Thomas Brown the Youngest"—'twas whispered balm, 'twas sunshine spoken, and I rejoice to write to you, per a telegram transmitted by Mercury, that no longer can it be said by the passer-by—the bricks are still there, but the minstrel is gone. I certainly felt I was born for much more than that persons should breathe not my name, and leave me to rest in the shade (the room behind the partition), where cold and unbonored my bust had been laid, were it not for the press, that, in the nick of time, found that I had been taken from my nook. It is only fair to say for the good man who now dispenses spirit, like my sainted sire, that the house is worthy of me and my melodies; and, were a room fitted up in it with the portraits or busts of my brother poets adorning its walls and niches, the house might be called the Minstrel's Home, at the Poet's Corner.—Allow me to subscribe myself,

THE SHADE OF TOM MOORE.

Nubibus, Friday, March 23.

'Tis restored! 'tis restored to its small niche secure,
The bust of our Poet—our classical Moore;
"The bard of all circles, the charm of his own,"
Is again in the nook in the "Old House at Home."

A PRINTER'S DEVIL.

GENERAL BUILDERS' ASSOCIATION, ENGLAND.

THE annual meeting of the above Association was held at the Palatine Hotel, Manchester, on the 7th ult.; H. LOVATT, Esq., of Wolverhampton, President, in the chair. There were about 200 gentlemen present as delegates from the various branch associations in all parts of England and Scotland. From the report of the committee it appeared that the Association had been considerably extended during the past year. A large sum was subscribed in the room towards a fund for meeting the expenses incurred, and to be incurred, in still further extending the Association, the chairman subscribing £100. The matter of contract agreements had been considered, and reports on the subject were received from various local associations. The committee was asked to continue its action until perfectly satisfactory terms, based on complete mutuality, had been secured. The suggestions of the committee on the labour question were unanimously adopted. They urge, the settlement of all trade disputes by arbitration, with provision for permanent courts in the various districts; the desirability of removing all trade restrictions whether arising from the rules of trade unions in regard to society or non-society men, apprentices, overtime, &c., or affecting the trade by limitations as to day-work, piece-work, machinery, quarried worked stone, &c.; the advisability of adopting the hour system, and the inconvenience attending the present frequent alterations in the rates of wages and other bases upon which contracts have to be founded. In reference to the rates of wages, the unanimously expressed feeling was that good wages were not only the due right of the operatives, but also the wish of the employers.

Mr. Alderman Neill, of Manchester, was elected president of the Association for the ensuing year, and the following gentlemen vice-presidents:—H. Lovatt, Wolverhampton; J. Sennan, Lord Dean of Guild, Edinburgh; W. Edwards, Manchester; W. B. Briggs, Birmingham; A. Dempster, Liverpool; W. Stones, Blackburn; W. Baker, Bristol; J. Longson, Stockport; and Marsden, Bath. An influential committee was chosen, and the proceedings, which lasted upwards of five hours, were brought to a close with votes of thanks to the secretary and to the chairman.

The foundation-stone of a new Wesleyan chapel at Wicklow was laid on the 17th ult. The site was granted by the Town Commissioners. With the No. of the DUBLIN BUILDER for Feb. 15th we gave an illustration of the chapel. Mr. Wm. Fogarty is the architect.

ON THE FORMULA (W.C.—W.)*

THE Institute must not charge me with affectation in the choice of a title to this paper. I am only guilty of modesty. I thought of the many married men in the Institute, and of the conspicuous position which of course the programme of our meeting and papers always is, or ought to be, placed in, and of the awkwardness of the full title staring every one in the face. "Dear me! what a singular subject," quoth mamma; "Without water!—how odd!" murmurs a gentle echo from a daughter. I could not bear the thought, and as, in our old office days we used to summon our fellow apprentice, W * * * C * * *, to put his initials on those little places I am treating of, my modesty forced me to hide myself in the initials disguised as above.

The peculiar feature of this paper, viz., "without water" has been long present to my mind as a great desideratum—and for many reasons; but before going into the practical question, and laying before you, as I purpose to do, the reasons that, to my mind, render it very desirable to devise some variation on our present machinery, and suggestions of means and contrivances for overcoming the long-experienced difficulties therein involved, I think it may not be unprofitable, and certainly it will be interesting, to collect together some of the earlier notices and facts which I have come across in the course of reading for other purposes, but which have the more tenaciously attached themselves to my memory, probably because they were so little worth retaining there.

I believe it will be very generally admitted that the W.C., or some substitute for it, must be as old as the human race; probably the first arrangement was of that off-hand, ready, character so much used to this day in our own country, which consists in the intuitive chemistry of restoring directly to the fields what had primarily been derived from them. This has the merit of great simplicity, but becomes difficult of application when the population is collected in masses in the same locality; although, such is the attachment to old customs—especially in a race naturally so conservative as the Irish—that the habit is still retained in our towns and cities, even after it has become not a little nuisance.

The first notice I have found of anything like a place actually assigned for the purpose is in the story of Ehud, the second judge of the Hebrews, whose date is about B.C. 1336. You may remember that Ehud, the left-handed (or, rather, ambi-dextrous) young man, possessed of unusual personal strength, was deputed by the elders of Israel to "bear the present" (which I interpret "bear the tribute") of the nation to Eglon, the king of the Moabites, then reigning at Jericho; how he turned back after delivering the present, and, unaccompanied by his previous companions, sought and obtained a private interview with the fat king, and then in the garden-parlour—which we may suppose, from the analogy of similar structures in the East, at this day, to have been a sort of kiosk, containing a suite of rooms for the private use of the owner during the heats of summer—stabbed the king with such force as to drive the dagger (or sword, as the same word is elsewhere translated), haft and all, into the fat king's body, without the possibility of withdrawing it. The narrative proceeds—"When lie" (Ehud) "had gone out, the servants came; and when they saw that, behold, the doors of the parlour were locked, they said, 'Surely he covereth his feet in his summer chamber, and they tarried till they were ashamed.'" The expression "covereth his feet" is a very peculiar one: we meet it again in the account of Saul's endeavours to capture David. He had heard of his being in the Wilderness of Engedi, a portion of the Wilderness of Judah, on the western shores of the Dead Sea, and took with him 3,000 chosen men, and "went to seek David and his men on the rocks of the wild goats" (the literal rendering of the Hebrew Engedi); "and he came to the sheep-cotes by the way, where was a cave, and Saul went in to cover his feet." It so chanced that David and his men were hidden in the recesses of the cave, and David, restraining his men from assaulting Saul when so completely in his power, contented himself with cutting off the skirts of Saul's robe. There can be little doubt of the meaning of the expression "covering the feet" when we bear in mind the loose flowing nature of eastern dress, even to this day, and, if I may trust to an imperfect recollection of the description which I heard some time back of a Turkish W.C., the phrase would equally apply now. It consisted of a slight depression in a marble floor in which water was constantly flowing, and passing away through a central aperture. It was used standing or slightly stooping, and an ablution with the water supplied the place of paper.

An Eastern curse—which we all must have heard or read, "may your father's grave be defiled"—may be traced in its spirit to the common form of desecrating the temples erected in Israel and Judah for idolatrous worship, coupled also with the establishment of public latrines; there we read of Jehu, 2 Kings x. 27 (B.C. 864), that he "broke down the house of Baal and made it a draught-house unto

this day." We meet the word "draught," used in the same peculiar sense, again in the passage "It entereth . . . into the belly and goeth out into the draught."

To come down to a late page of the world's history: in the long-buried city of Pompeii we have examples of the public life of a mixed Roman and Greek population at the period of the highest development of the form of civilization which then prevailed. I have taken two illustrations of our present subject from the work of Sir William Gell and Mr. Gandy; the first is the ground plan of the baths, which are also deserving of notice, from their exact similarity to the so-called "Turkish baths" of the present day: the only claim to the name being that they are still used by the population of Turkey, the Arab invaders having found them in use in the Greek Empire at the period of their overrunning it, simply retained and used them, but like true Easterns, have never changed an iota in their principles or construction; as their fathers found them, so the sons now use them, and will leave them to their sons after them. But the name is simple folly—as silly as the decoration in lath and plaster orientalism with which the buildings are generally encumbered. They showed more sense who started a similar bath in London, I think in Charles II.'s time, who called it by its Turkish name, Hammam, which gradually changed into Hummums, and now gives the name to two hotels in Covent-garden—the old and new Hummums. You will perceive by the plan that three of the public entrances are provided with those conveniences which we commonly describe as "necessaries." I have tried in vain to discover any account of the means for getting rid of the deposits, which in such a situation must have been very considerable; but it is not unnatural to suppose that advantage must have been taken of the vast quantities of water, flowing to waste after being used in the baths, to assist at least in cleaning out these places.

The next illustration I have to submit, is a plan of one of the houses at Pompeii, known as the house of Sallust, or of Actæon—both names are of course mere guesses, but they serve for distinction as well as any other. This appears to have been the house of a well-to-do, middle-class citizen, as, although on a small scale, it contains all the usual parts of a house not quite Roman, nor yet quite Greek in its plan, but partaking of the characteristics of both. It contains moreover what, I believe, have not been found in any other house in Pompeii, viz., two conveniences; one situated in the angle of the viridarium or sham garden, the other in the—but let Sir William Gell speak: "On the right of the way up stairs is the hearth for cooking, separated therefrom by wooden ballusters which do not remain; on the other side is an arched recess about 3 feet deep; a convenience, according to modern, at least English ideas, most inconveniently situated. The wood-work of the seat is gone; marks for the hinges, and fastening to the door, may be observed." In a note he adds, "Petronius might well say 'Quam bene olent qui in culinâ habitant.'" If this had been the plan of Plautus' kitchen, we should not doubt the angle alluded to in the Persa, when the pretended Virgo, to give an idea of her low birth, says she was born "Ut mater dixit, in culinâ ad lævam manum." He goes on to say, "It would appear that in Ancient, as in Modern, Italy and Greece, a proximity between the ultimate receptacle of the aliments and their place of preparation, was considered desirable," and quotes Horace, Sat. i. 6:—

"Mihi curto,

Ire licit mulo vel, si libet, usque Tarentum,
Mantica cui lumbos onere ulceret atque equus armos,
Objiciet nemo sordes mihi, quas tibi, Tulli,
Quem Tiburte via prætorum quinque sequuntur
Te pueri, lasanum portantes æuophorumque."

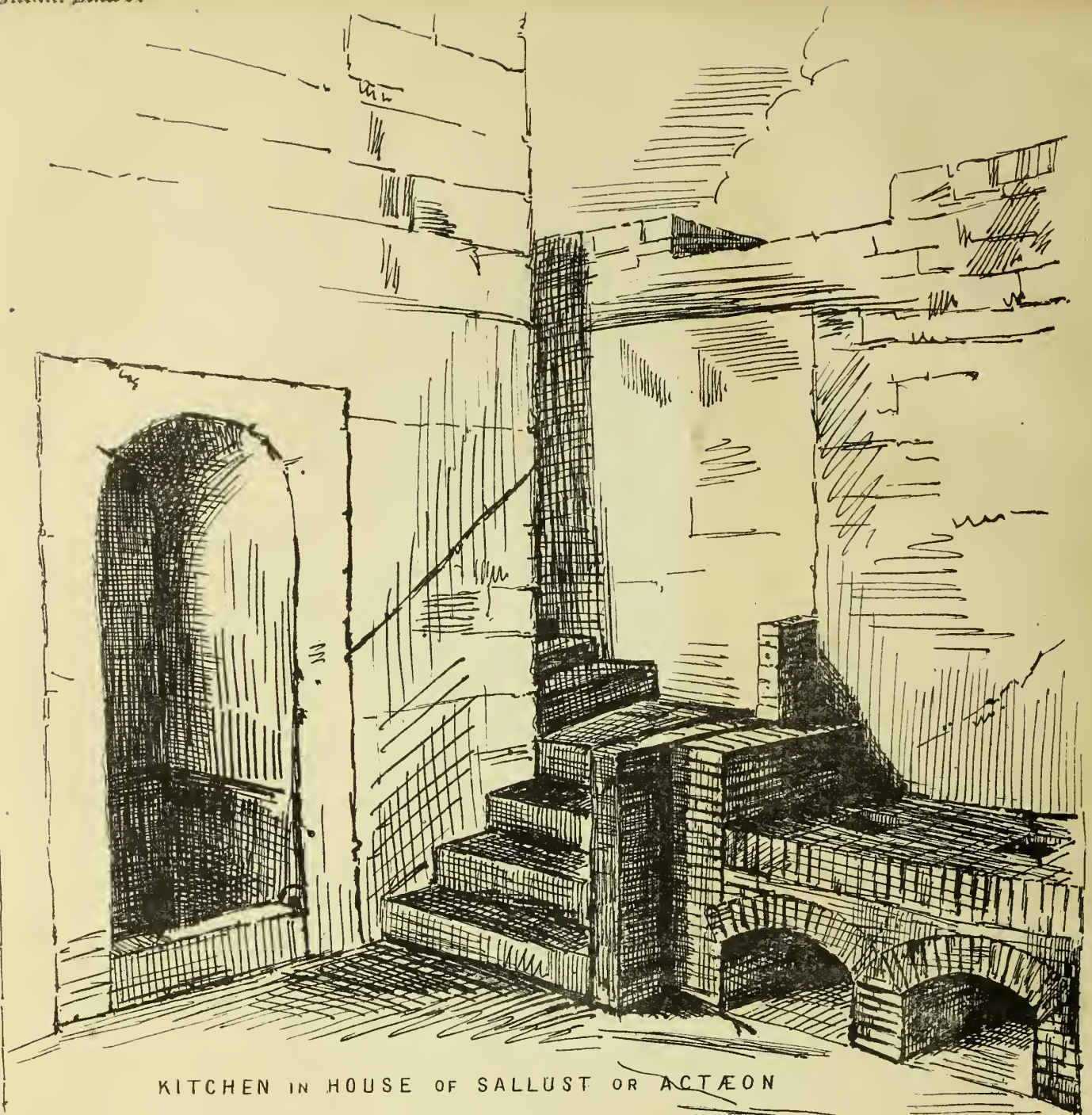
"In ancient Rome were 144 public cloacinæ; also the public walk with the Sella Patrocinianæ. Perhaps something of this sort remains to be found at Pompeii, where few houses can boast the possession of such conveniences at all: but the lasana were portable."

To come down to the Middle Ages: I cannot do better than lay before you what is stated by Viollet-le-Duc in the article "Latrines," which is as follows:—

"We willingly admit that our forefathers in their houses, palaces, and castles, had none of those conveniences that now-a-days (in the northern cities at least) we could not do without; and from the fact that at Versailles, the nobles of the court of Louis XIV. were under the necessity of relieving nature in the corridors, for want of closets, we may conclude, by the law of proportion, that in the homes of the Dukes of Burgundy or Orleans, in the 15th century, even less precaution was taken." In a note he states—"This carelessness in providing for the physical wants of our nature was carried to extreme lengths when they dreamt only of producing noble architecture; not only did the Castle of Versailles, the residence of the Court during the 18th century, contain so restricted a number of 'privés' that all the persons in the court were obliged to have 'chaises-perçées' in their dressing-rooms; but palaces of much less extent contained none at all. It is not so very long since all the suites of rooms at the Tuilleries were without closets, so that it was necessary to have a general emptying effected every morning by an officer detailed for the purpose. I recollect myself the odour that, in the time of Louis XVIII., pervaded the corridors of St. Cloud, for the traditional usages of Versailles were there scrupulously observed. This fact, as regards Versailles, is by no means exaggerated; one day, when very young, I was visiting this palace, in company with a well-born lady of the

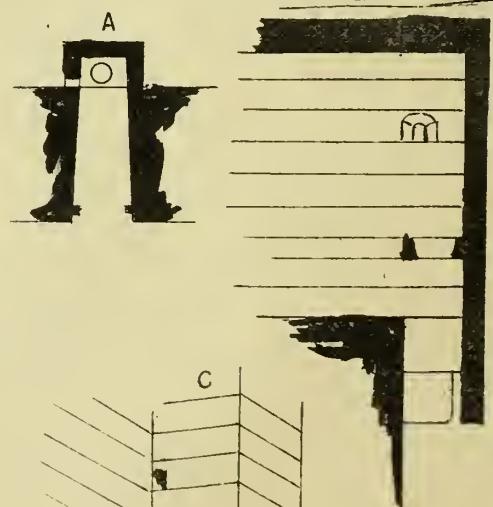
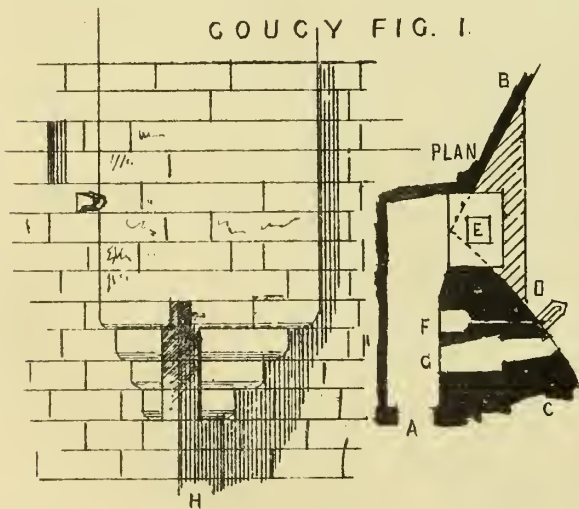
* A Paper read at an Ordinary General Meeting of the Royal Institute of the Architects of Ireland, by Mr. J. H. Owen, M.A., Fellow, Hon. Sec.

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KITCHEN IN HOUSE OF SALLUST OR ACTÆON

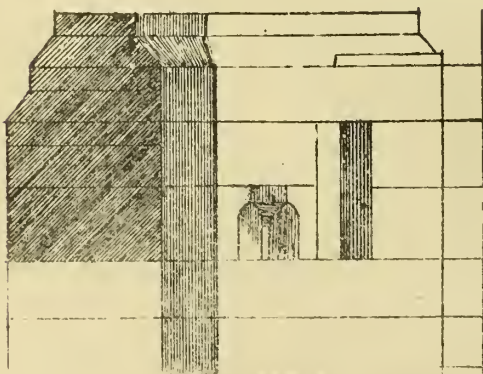
GOUCY FIG. 1.



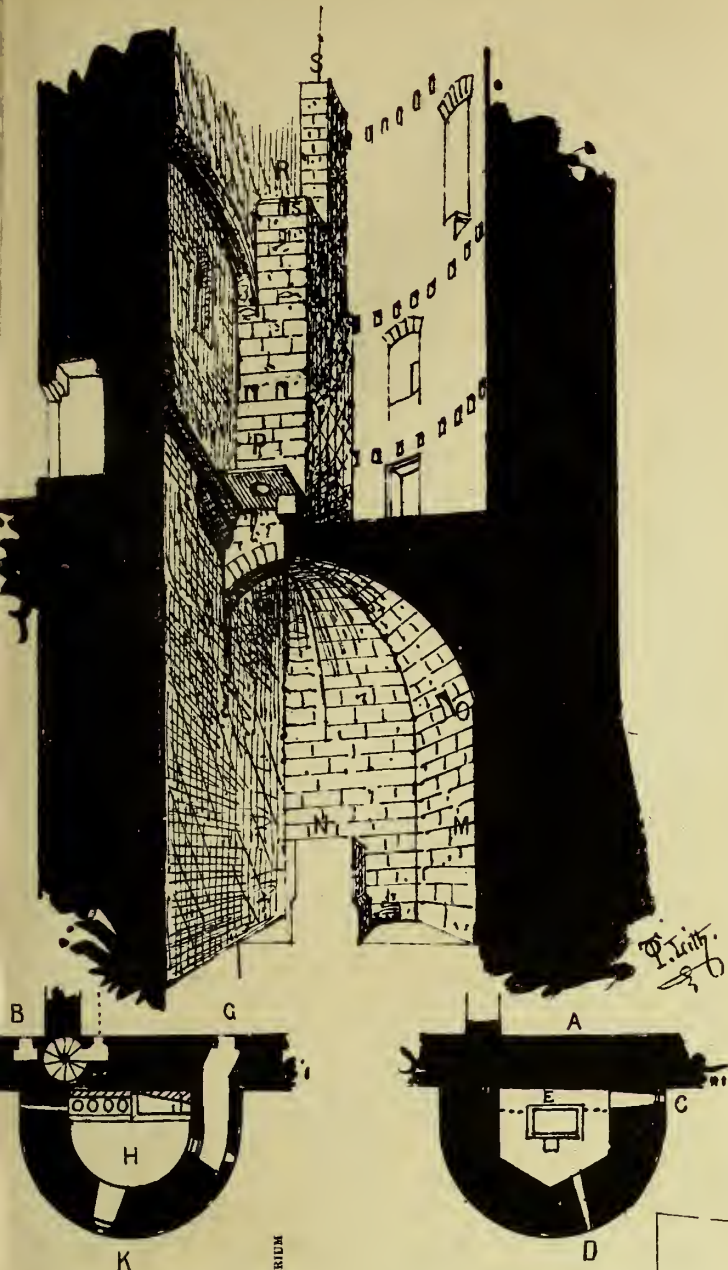
House of Sallust.
(REFERENCES)

- A CULINA AND W.C.
- B W.C.
- 1 TANK
- 2 TRICLINIUM OR CURICULUM
- 3 TABLINUM
- 4 FAUCES
- 5 10 & 11 CURICULUM
- 6 LARARIUM OR PINACOTHECA
- 7 & 8 ALA
- 9 PASSAGE
- 12 STAIRS TO UPPER STOREY
- 13 OVEN
- 14 BAKERY
- 15 CORN MILLS
- 16 STORE
- 17 18 19 & 20 CILLA FAMILIARIA
- 21 ACUS
- 22 COMPLUVIUM
- 23 VESTIBULUM
- 24 25 26 & 27 SHOPS

CHATEAU
DE LANDSPERG
(Bas-Rhin)
FIG. 2.

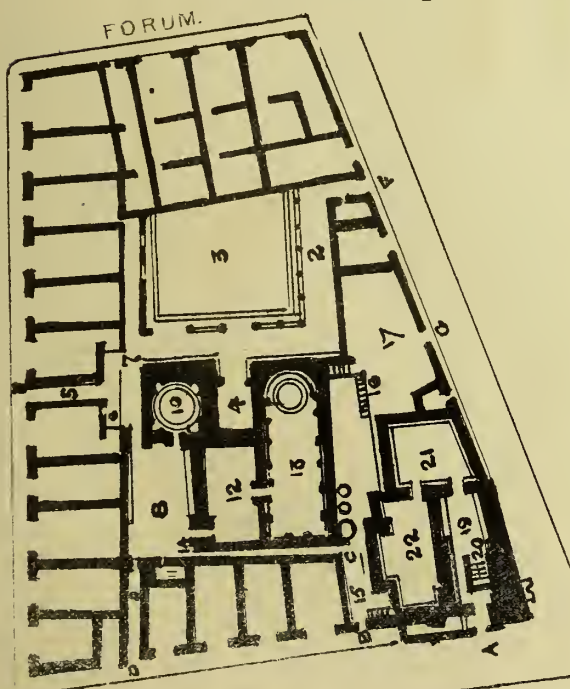


CHÂTEAU DE PIERREFONDS FIG. 3.



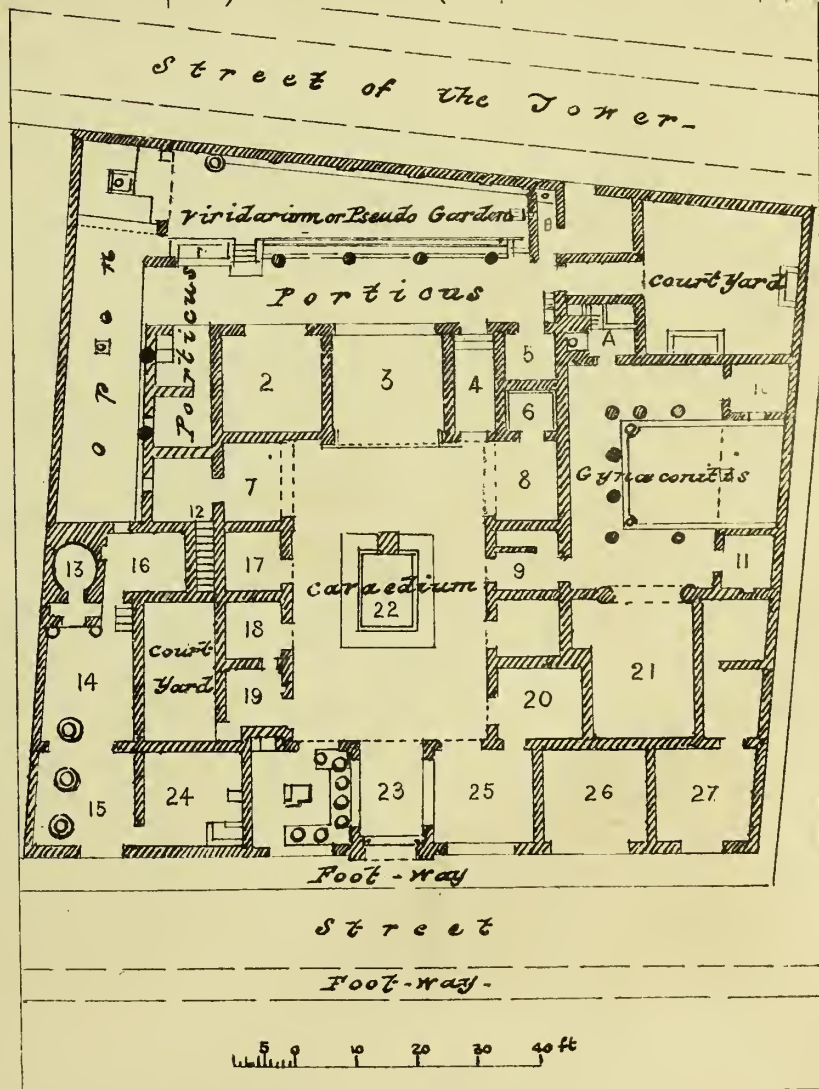
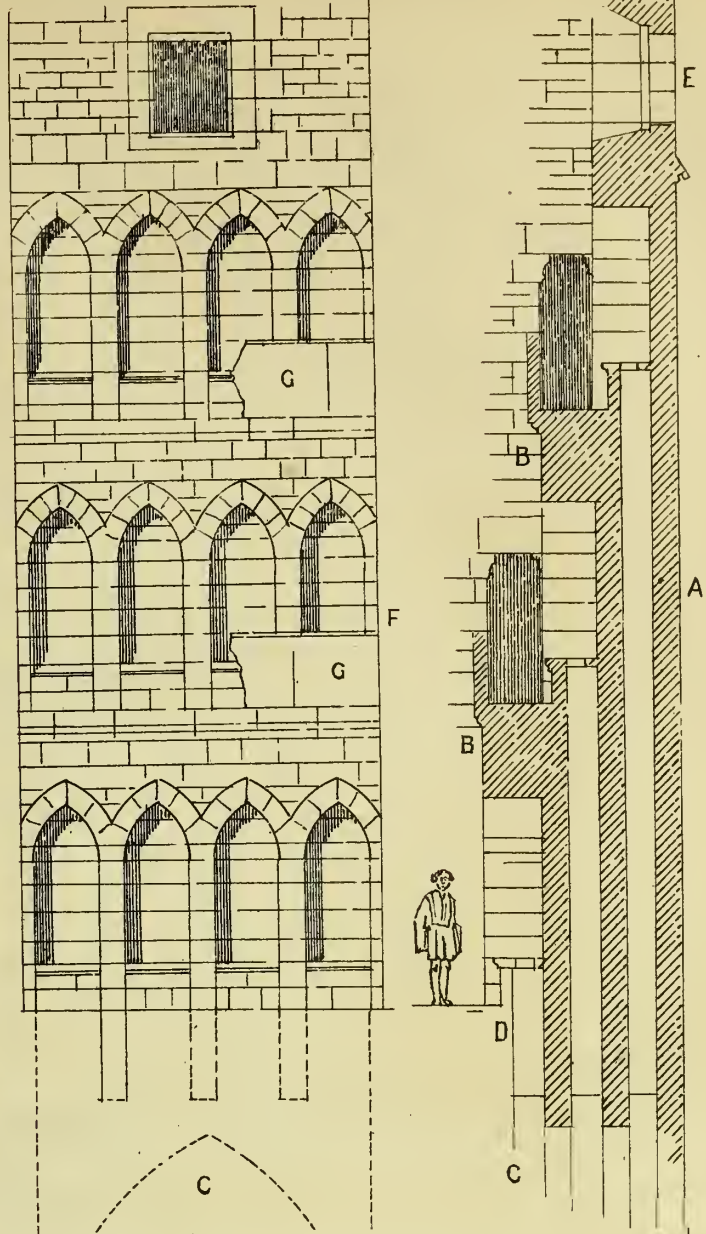
- 1 W. C.
- 2 PORTICO
- 3 ATRIUM
- 4 BALNEATOR'S ROOM
- 5 CORRIDOR
- 6 W. C.
- 7 PASSAGE
- 8 FRIGIDARIUM, ALSO APODYTERIUM
- 9 CORRIDOR
- 10 COLD BATH
- 11 BALNEATOR'S ROOM
- 12 TEPIDARIUM
- 13 SUDATORIUM
- 14 PRÆFURNIUM
- 15 CORRIDOR
- 16 ATRIUM FOR BATH SERVANTS
- 17 APODYTERIUM
- 18 NATATIO
- 19 NATATIO
- 20 NATATIO
- 21 NATATIO
- 22 SUDATORIUM

FEMALE



GROUND PLAN OF BATHS

CHÂTEAU DE MARCOUSSIS FIG. 4.



HOUSE OF SALLUST OR ACTÆON

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court of Louis XV., and going along a passage that was stifling with stench, she could not refrain from exclaiming with regret, 'cette odeur me rappelle un bien beau temps'—that smell reminds me of the good old times."

He resumes the article thus:—

"Yet, although the castles of the middle ages did not present façades arranged with accurate symmetry, colonnades, and imposing fronts, they did possess latrines for the noble lords, as well as for the soldier and the lacquey—they had as many as were necessary, and those very well contrived. At Coucy, the towers and the keep of the commencement of the 13th century have latrines on each storey, so constructed as to avoid smell, and all the inconveniences attending such necessities. The latrines of the keep deliver into a large pit, well constructed, which could be emptied without inconvenience to the inhabitants. The latrines of the towers were established in the re-entering angles formed by the meeting of the towers and the curtains, and discharged the feculent matter into the wooded escarpment surrounding the castle.

"The sketch (1) shews one of these closets, opening on a landing at A, communicating with the rooms and the staircase. B is the curtain, C the tower; from B to D is a wall carried on corbels, and masking the seat, E; at F is a urinal, and G is a window. The sketch shows the exterior elevation, and a section along the length of the closet. In this case there was no reason to be anxious about stench, as the matter fell over a precipice.

"The sketch (2) represents a closet which exists still entire in the Castle of Landsperg, Department of the Bas-Rhin, which also, like those at Coucy, throws the matter outside. The seat is altogether carried on corbelling from the face of the wall; the sketch shows the plan, the section, and a perspective view of the corbelling of the seat and the fall. As there was reason to dread missiles which might be projected from outside, it will be perceived that the constructor has taken the precaution of placing a flat slab, descending to the level of the side corbels, so as to mask completely the legs of the person sitting on the seat, which is formed by a simple slab pierced. At night it was usual for persons going to the closet to have themselves escorted by a servant carrying a torch. This custom seems only to have been given up at a late period. Gregory of Tours relates (lib. 11, cap. xxiii.) how a priest died in the 'privés' while the servant, who had accompanied him with a link, was waiting for him behind the curtain which screened the entrance; and in the 'Mémoires de Jehan Bachelin,' written about 1545, we read how a king's knight lodged at Rouen, at the sign of the 'White Horse,' 'luy estant levé il se en alit aux privetz aver le serviteur du dit logis, lesquels tous deux fondyrent et tombirent dedans lesdits privetz et furent tous deux noiez à l'ordure.' In the 'Cent Nouvelles nouvelles' mention is also made of great folk being attended by servants. This explains why, in the mediæval latrines, they left a broad space in front of the seats, or frequently a sort of passage, of some length, between the seat and the entrance.

"The pits were particularly attended to by the builders; we have many examples of them in mediæval castles. They were vaulted with stone, and provided with ventilation and the means of emptying. But it is in the construction of latrines for general use that the architects have given proofs of their care. In castles which must contain a numerous garrison, there is always a tower, or detached building reserved for this purpose. At the Castle of Coucy there were extensive latrines, the pit of which is preserved, between the great hall and the building containing the kitchens. There are remains of latrines arranged for a large number of persons at one of the three castles of Chavigny (Poitou). In England, at the Castle of Langley, in Northumberland, there remains a building, four storeys high, intended for latrines, which are arranged *tout à fait monumentale*. There were handsome and large latrines at the Castle of Marcoussis, (4) in the 13th century, about on a par with those at Langley. Those at Marcoussis, attached to one of the curtains, were composed of a narrow building, covered in, but without floors, the several ranges of closets communicating with the storeys by the doors and passages shown on the transverse section. The pit was covered in by two arched ribs, between which were the three shafts for the fall from the three storeys. There were four seats on each storey, and from the bottom, at the level of the ground floor, up to the roof, springing about one metre over the upper window, there were no floors. By this means the ventilation was easily effected, and the stench was not conveyed through the doors into the adjoining apartments. The longitudinal section shews the elevation of the closets, part of the parapet wall being removed."

"At the Castle of Pierrefonds (3), the building of which dates at 1400, there is a tower, adjoining the quarters of the garrison, which was altogether given up to the latrines. Referring to the sketches of this curious construction, the first is a plan of the tower at the level of the ground, outside which is the level of the castle ditch; it shows the aperture for emptying, an opening for ventilation, and in the centre a block of ashlar masonry placed in the middle of the pit, to facilitate the emptying. Next is the plan of the first floor, level with the ground in the courtyard of the castle. From the adjoining rooms the only communication is by a long passage, provided with two doors. There are four seats on this floor, and the trunk alongside of them, which was the discharging shaft of the closets on the two upper floors. The perspective section shews the pit, with its block of masonry and ventilator, and the seats on the three storeys, the several floors being removed to shew the arrangements; the upper shaft is prolonged by a chimney at the side, up to over the level of the roofs, to give a draught, and near it was placed a small fire-place to quicken the draught. It must be confessed that many of our establishments intended for the accommodation of large numbers, such as barracks, colleges, schools, &c., have not as well-arranged latrines as these. It will be seen that by means of the opening in the side and the central block, it was very easy to empty the pit often and with little delay; that the pit contained a considerable cubical amount of air; that it was ventilated by double openings, and consequently could not disengage any great amount of gas into the closet rooms, which were ventilated by the windows, and besides that, all the entrances contrived on the different floors of the tower, consisted of long, crooked passages, themselves ventilated and cut off by double doors."

"In the same castle, the closets of the grand apartments of the lord, or the keep, are arranged with extreme care in a narrow part of the building, receiving air from both sides, isolated, and with windows opening to the north, as is the case also with the windows of the common latrines of the garrison which have just been described. These minute precautions taken in the construction of these important portions of dwellings give place, towards the end of the 16th century, to an extreme negligence, the reason being that at that time they strove to produce grand symmetrical arrangements, that the well-being of the occupants of a palace or a house, what we call *comfort*, was subjected to conditions more suitable for gods than beings merely human.

"Before I close it is necessary to give a caution as to the stories of ouhliettes told by the ciceroni who guide amateurs over the ruins of feudal buildings. In nineteen out of twenty cases those ouhliettes, which cause such a thrill of horror to visitors of mediæval castles are nothing but common latrines, just as many a kitchen is transformed into a chamber of torture. On several occasions I have had the pits of castles emptied, which had been the objects of mingled awe and terror, as having been the living tomb of wretched human beings; but I only found in them, mixed up with dry excrement, quantities of rabbits and hare's bones, some coins, fragments of crockery, and the mummies of cats in great abundance."

I may add a curious name for a W.C. which I found marked on a very old map of the conventual and cathedral buildings at Canterbury where the same building, of which a sort of elevation is given, is called both the "necessarium" and the "gong"—the word being derived from the old Saxon "gang," "to go."

The examples given by Viollet-le-Duc, and his descriptions and conclusions, are so good and exhaustive of the subject that I have thought it better to transfer his article entire to my paper rather than get together a something similar, but less perfect, from other sources. He leaves the question at about the year 1600; during the two centuries and a-half which have since intervened, England seems to have taken the lead in the contrivances so essential to comfort—a word which has been adopted by the French, and is used in italics by Viollet-le-Duc in the article I have read to you. To within a very short time—and as far as I know, to this day—a water-closet in France has been known as "*les lieux Anglais*," or simply "*les Anglaises*." (These conveniences are always plural in French, probably from the same association of ideas, that provided a scale of seat and hole, graduated to suit different ages, or from the social habits of our forefathers, who were used to both take, and get rid of, their food in company.) The water-closet proper was invented by, or rather assumed its present shape, under the auspices of Joseph Bramah. This remarkable man, born in 1749, after serving his apprenticeship as a carpenter, set up in London as a cabinet-maker; he brought out his lock in 1784, next he converted the hydraulic, or hydrostatic, paradox into one of the most simple, useful, and powerful mechanical servants of mankind—the hydraulic press. He died in 1814. He is quoted as having effected considerable improvements in the water-closet, and it certainly was left by him in the comparatively perfect state of what we know as the "valve" closet; there have been many improvements on this, but the thing has been for so long a time quoted under his name, that I think we may fairly conclude that we are indebted, substantially, to him for the invention. That there was some means of using water, in connection with closets, I am convinced, from the plans of the theatre at Metz, published in a dictionary of architecture by M. C. F. Roland le Virloqs in 1770, which shews both ordinary privies ("*lieux*") and water-closets ("*lieux Anglais*"), but I have not been able to find anywhere any description of the Bramah contrivances. In the modification of Bramah's patent which is in use at the present day, we have nearly everything that can be devised—the most unseemly necessity of nature is provided for in such a way as to present the least possible amount of offence to the most sensitive organization, and could we close the account then—were there no other considerations to be weighed but the simple one of, how to transfer our feculent matter to the house sewer, and let it then run away wherever the sewer would bring it, there would be no difficulty in the case; and as long as water-closets were few in number, and confined to the houses of the wealthy, the after-evils escaped notice from their limited extent; but it is the genius of English life to popularize, and bring within the reach of all classes, everything that tends to render home more comfortable, and more respectable. This may be seen in a thousand different ways. Until very recently the dinner of a French gentleman must either be eaten off Sévres porcelain—each article of which would be an heir-loom—or such vile, clumsy, ill-glazed crockery as an English labourer would be ashamed of—worse in fact than could be bought in England. This spirit of wide extension of comfort in the house, has caused, in the eighty or ninety years since Bramah's invention, an extension of its application so wide, so almost universal, in many of the English towns, as to give rise to other and most serious evils. The *first*, being the diversion from the land, to the water, of those elements which are absolutely necessary for the continuance of its fertility—amounting in money value to many millions annually—and which we replace, imperfectly, by similar substances brought from the ends of the world; and *secondly*, by the pollution of the natural drainage of the country. The state of the Liffey at low water on a warm day addresses every sense (for the stink is so *loud* you can even *hear* it), in unmistakeable language, calling loudly for some remedy. The remedy to this evil has been generally sought to be attained, as in London recently, by intercepting the sewers and not permitting them to discharge into the river, except at such a nearness to the estuary and at such a time of the tide, as will ensure the sewage being conveyed out seaward and mixed with so large a proportion of tidal water as to have its noxious elements neutralized. My idea is to begin at the other end—to keep

the feculent matter out of the sewers—and this is the real essence and meaning of the Formula prefixed to this paper—*W.C.—W.*, a closet without water. If the phrase will be received, I will continue to use the word water-closet, as being familiar, in describing shortly the sort of convenience referred to.

At present our closets supply a receptacle—the basin or pan—of glazed earthenware, which is easily cleaned, containing a certain amount of water, which itself condenses the gases evolved to a very great extent, and prevents adhesion to the surface of the pan as far as it extends, the emptying of the pan is accompanied by a fresh discharge of water into it, a portion of which remains in it for the reception of the next deposit, the remainder assisting to force the previous charge through the D trap, which prevents the rising of any effluvia from the drain: the rationale of the whole arrangement is the reducing stench, and labour of removal, to a minimum, at the expense of daily labour in pumping, periodical visits from the plumber, occasional startling effects of the visitation of frost, and the two grand objections which have suggested this paper, and which I have before stated. Now, without pretending to bring any special invention before you, I think I shall be able to point out to you the means and directions, by pursuing which, it is by no means impossible that these annoyances and difficulties may be overcome without entailing other, and more serious ones, in their place. And here there occurs to my mind the recollection of an attempt in this direction, made as far back as about 1832, or probably a little sooner: an ancient relative of mine, curious in strange inventions, fond of everything that was out of the way and more remarkable, as a general rule, for singularity, and cleverness of idea, than probable practical utility, was possessed of a delph pan with a cover to it, generally used as a receptacle for soused herrings, when such luxuries were in season—at other times reposing in harmless uselessness on the store-room shelf. Boyish curiosity—perhaps a prophetic foreshadowing of this paper—led me to inquire what was its original intention, when I was informed that it was a presentation copy of the invention of a friend, as a substitute for, and improvement on, the ordinary close-stool. (I need scarcely observe that it had never been applied to its intended end.) It contained one feature, illustrative of the times. Its inventor was evidently not an advocate for “the Bill, the whole Bill, and nothing but the Bill,” as he had chosen to decorate the interior with a portrait of Lord John Russell, with the intention doubtless of carrying out in effigy the feeling of the Eastern curse, already quoted, “May your father’s grave be defiled.” I do not remember any further details of this invention, but the general form is suggestive of a possible way of attaining the object I am aiming at.

If that object were once attained, we should probably find that the contrivance by means of which it was carried out involved—first, facility for emptying and cleansing; second, portability; third, air-and-stench-tightness; fourth, means of keeping down smell while in use; fifth, simplicity in use and maintenance; and if to these can be added, sixth, moderation in first cost—I think it will be acknowledged that an improvement will have been made. I do not anticipate that it will be possible ever to do without the separate apartment known now as “the closet”; it is obvious that, on many grounds, it is desirable to retain a special place set apart for this special purpose, and also that the closet should have the same care taken, as at present, to ensure its being convenient of access, with the necessary privacy, and properly lighted and aerated, and even, I would urge that, wherever it is possible, a hint should be taken from the Gothic latrines, and that closets should have double doors, with a lighted and aerated interval between them; but when we come to fitting up this closet the difference of system commences. As regards the seat, as, in the present day, we are too luxurious to tolerate the coldness inseparable from any material that would be necessary to fulfil the conditions involved in what we have to find out, it must be, as at present, of timber, of some sort or other, which, however, involves no difficulty, as once the nature and form of the receptacle is settled on, the arrangement of its timber cuticle is one that any carpenter’s apprentice could solve. The two first questions may be very properly taken together, viz., what material, for the purpose in view, will best combine *facility for emptying and cleansing, and portability*? After thinking of china, which is very easily cleansed and emptied, but fails in portability, and is also very liable to damage, I thought of the new sort of enamelled iron as presenting many advantages, but coupled with much liability to deterioration by damage to the glaze, rust, if of sheet iron, and great weight, if cast iron; and finally settled in my own mind that probably the best and fittest material would be tinned copper, which is very light, very strong, can be spun to any form required, can be easily cleansed, would last for ever, and sell for old copper afterwards. Our proposition, then, comes to this, that in an ordinary closet, we have a timber seat, not varying much from what is in ordinary use, under the aperture in which, is a pan, or vase, or receptacle, of copper, with a pair of handles, and tinued inside; the next question then comes, how are we to add, to this

apparatus, the necessary qualities of *air and stench tightness*? This, I think, can be done very simply, and, at the same time, very completely, by making the pan double-coated for the last inch or two of its height, forming between the outer and inner coat an annular cistern, and then providing a cover with a projecting rim to it, which would go down to, or near, the bottom of the annular cistern, and form a perfect trap, by means of water kept in the cistern, or the same might be done by keeping the annular cistern partially filled with soft fat, by which the cover would be luted on, and all escape of air and smell prevented. It is plain that when a change was desirable, this whole apparatus, covered up, could be conveyed anywhere without any offence, and without exciting painful memories in the bosom of the most conservative old duchess. But as to *keeping down smell while in use*, this is an inconvenience not overcome, in the best closets, as at present contrived, and not likely to be overcome altogether by any contrivance that can be devised, but I think it might be very much overcome, in my dry closet, by a moderate use of charcoal powder both before and after using the closet; a very convenient and cleanly mode of using it, would be to provide each closet with an ordinary kitchen dredging box, from which the charcoal could be shaken out without soiling the fingers; the well-known properties of the charcoal, and the short period of exposure would insure at least equality, if not superiority, to the new apparatus in this respect, and I think that the whole description will have conveyed to your minds the idea of an apparatus that fully answers the fifth requisite, *simplicity in use and maintenance*. I do not at all imagine that I have produced a perfect thing, or have removed all difficulties, but I think I have succeeded in shewing how a dry closet can be arranged which shall be inoffensive in the house, less costly in first construction, and, while involving not more labour to servants than the pumping water to a closet of the ordinary construction, shall leave the fæces in a concentrated form, ready for the manure heap in the country, or for deposit in a dustpit in town, in a form certainly not more offensive or prejudicial to health than those receptacles universally are, and withal, conferring on the owner of the house, the blessed exemption from the periodic inroads of plumbers at one time, and bricklayers at another, to cobble up pipes and sewers and drains—always prefaced by the house being rendered unbearable by pestilential smells, or deluged from burst pipes. An old friend used to say that if you gave a young lady a watch, you ought to settle on her an allowance to keep it in repair; and certainly for every W.C. in your house, you ought to allot a fixed portion of your income to meet wear and tear, and provide, as best you can, for consumption of temper and patience.

This same arrangement is equally applicable as a substitute for that most offensive and disgusting piece of furniture, the close-stool, and would be found invaluable in the hospital, the nursery, or the sick room.

I do not intend to take out a patent for the design; it will be sufficient reward for my labours in a cause in which all are interested if they shall be found to have added to the comforts of home, lessened the tedium of the weary hours of sickness, reduced the tendency to the growth and spread of endemic disease, and, by husbanding resources now wasted, added to the wealth of the nation!!!

The conclusion of Mr. Owen’s paper was received with mingled amusement and applause.

Mr. Neville, C.E., City Engineer, observed that the question treated of by Mr. Owen, however humorously it had been brought before the Institute, was in reality one of the most serious questions of the day. Some practical illustration of the inconveniences felt, and the evils to be removed, were afforded by the state of the Liffey, but this being a tidal stream, and consequently having its waters renewed or diluted twice a day, could afford but a very limited idea of the extent of pollution to which the rivers and streams in the neighbourhood of the great inland towns of England had arrived—they were continuous cess-pools—fever hot-beds drawn out into miles of length; in some cases they had almost ceased to flow from the mass of corrupting solids poured into them. The consequence was, as might be imagined, most serious, and the remedy was still to be sought, and the right direction in which to seek it was undoubtedly that of prevention. The rivers would soon become pure if the sources and supplies of impurity were cut off.

After a prolonged discussion, the thanks of the meeting were passed to Mr. Owen, and his paper was referred to the Council for publication.

The meeting then adjourned.

ABOLITION OF TIMBER DUTY.—We learn that the Lords of the Treasury have informed the Commissioners of Customs that it is the intention of Government to propose the abolition of the duty on timber and wood; and consequently in anticipation of Parliament’s agreeing to the proposal, my lords have desired that the said commissioners shall give directions for the admission of timber and wood free of duty, on and after the 26th ult., upon the importers giving bond to pay the duties thereon should Parliament not accede to the proposal of the Government.

DR. EDMUNDS' SYSTEM OF VENTILATION.*

My object in bringing Dr. Edmunds' system of Ventilation under the notice of this Society is, first, because I have experienced its utility in preserving life and promoting health on board the ships of Her Majesty's Emigration Commissioners; and, secondly, because I believe, with very little alteration, the apparatus can be adapted to ventilating the crowded dwellings of the poor, the ill-ventilated rooms inhabited by whom do not materially differ from the confined space allotted to emigrants on board ships during their transit across the pathless deep. With respect to the necessity existing for a better system of ventilation on board ships than any hitherto devised, we have only to refer to the frightful mortality in crowded passenger ships, arising from typhus, cholera, and dysentery.

In the ships of Her Majesty's Commissioners, in whose service I hold the office of Superintendent, the average mortality during the most unfavorable seasons never exceeded two per cent.

Last year the system of ventilation I am about bringing under your notice was introduced into the service.

Some of the ships have accomplished the passage without the loss of a life, many of them being altogether free from fever, dysentery, or diarrhoea, the principal sources of mortality at sea. Another satisfactory result is the reduction of infantile mortality.

In some Australian passenger ships I could mention, one-third of the children under five years have died. In the Commissioners' ships fitted with Dr. Edmunds' apparatus, worked by a steam jet, the results have been truly gratifying, some of the vessels—"The General Caulfield," for instance—not losing any children. The system has been introduced into the Royal Navy; and while the mortality in the mercantile marine is three times greater than in the Navy, the mortality in Her Majesty's ships fitted with Dr. Edmunds' system is much less, while the diminished sick list amply testifies to the better sanitary condition of the sailor's dwelling.

To illustrate the necessity that exists for improving ventilation in ships, and to preserve them from premature decay, I may refer to the observations of eminent writers on ship-building. Murray remarks that the means at our command for the purpose of preserving timber from premature decay may be summed up in two words—Seasoning and Ventilation—thorough drying of the timber on shore, when practicable; but by all means good ventilation on board. If these well-known and universally approved principles were properly carried out, we should hear but little of rotten gunboats, or hasty repairs to frigates after a first commission. What is most urgently required is, that there shall be as little stagnation of air as possible. However well seasoned and dry the timber may be when a vessel is launched, it will rapidly absorb moisture from the damp atmosphere of the hold, unless evaporation from its surface be kept up by a forced circulation of air. The beneficial effects of Dr. Hales' system of ventilation were evidenced by the fact that from 1753, when it was first employed in the old "Prince," to 1793, when the use of it was discontinued, the durability of ships was materially improved, as well as the health of the crews of those ships to which it was applied, especially transports.

The Earl of Halifax, in a letter to Doctor Hales, stated that the mortality of the ships on the coast of Nova Scotia which were not ventilated was, in comparison with those which were, as twelve to one. Dr. Hales proposed to keep up a circulation of air with windmills and air-pumps. Mr. Parkins followed his system, substituting fans.

But what is most urgently required has not yet been practically realized—the producing a constant disturbing force on the lower part of the hold, which should give motion to the foul air that has a natural tendency to lodge there, while suitable means are, at the same time, in operation for carrying it off, and supplying its place by the introduction of pure air. The constant operation of some means to produce this effect is necessary for the preservation of ships, the health of the crew, and the ship's stores.

The introduction of pure and dry air into the hold is requisite to carry off the humid particles which adhere to the interior of a ship, and excite the latent elements of decay, which, under circumstances favourable to their development, are soon apparent.

Fincham, in his "Outlines of Ship-Building," remarks that it is in the hold of a ship, more than in any other part, that the destructive agents accumulate—moisture and impure air, arising from the decomposition of animal and vegetable substances which fall into the hold, or accumulate from the defective manner of stowing ships. The want of proper ventilation will produce the most serious results to the health of the crew and the condition of the ship.

To accomplish what is desired, a system of ventila-

tion is needed which will ensure a pure atmosphere in every part of the hold, and between the decks. In order to prevent the destructive effects of air-heat and moisture, and to produce thorough ventilation, some disturbing force should be employed. It being thus evident that persons best qualified to form an opinion on the subject conceive that an efficient system of ship ventilation is necessary for the preservation of ships from decay by dry rot, and as a means for preserving the health and promoting the comfort of passengers and crews; for as damp and insufficient ventilation cause the destruction of the ship, so they prove equally injurious to the health of her occupants; and if an effectual remedy can be found for dry rot by removing its causes, by the same means will the ship also be rendered healthy. The inventor of the system of ventilation which I now submit for your consideration has, I think, accomplished what has been so long required.

Doctor Edmunds, Staff-Surgeon in the Royal Navy, has had his attention strongly directed towards the subject of ventilation by painful experience of disease and discomfort arising from the inefficient and uncertain measures usually adopted to lessen the stagnation of air in the close and confined decks of vessels of war. The construction of a ship, which is often considered to oppose so many obstacles to free ventilation, in Doctor Edmunds' opinion, in reality offers facilities which are now for the first time made available by his invention. The important object is attained by means of a novel system of air shafts and channels, through means of which the perfect ventilation of the ship's timbers and of the inhabited decks and cabins is secured. It is well known that dry rot, or decay misnamed dry rot, is caused by dampness of the timber surfaces forming principally the sides of the openings or timber spaces, which are close channels leading up from the bilges at the bottom of the hold; these have a vent in the between-decks; and it is for the purpose of their ventilation, to prevent decay or dry rot in the timbers, that they are left open; otherwise, but for so important an object, such a source of foul smells, malaria, and consequent disease, would never have been allowed so long to pollute and poison the air of a confined space in which so many have to live and breathe.

It would be a parallel case if persons on shore inhabited a crowded apartment, into which the foul air from a damp underground cellar, with drains running through, had vent by numerous open channels; but the passive circulation which takes place is insufficient for the purpose intended. The openings are usually in a damp state; and any timber employed in the ship's framework, if not well seasoned, is sure to decay. The premature decay of the gunboats hastily built during the Russian War is conclusive evidence of this. By the first part of the new system the operation of these openings or channels is reversed; they are converted from their present action of fouling the air into most effectual means for purifying it. This is effected by making them all branch air channels of one large airshaft on each side of the ship, which being led into the funnel in steamers, or into hollow iron masts or tube and cowl ventilators in sailing vessels, a constant updraught is created through them up from the bilges and hold, and down from the mess deck, to the shaft, carrying all their foul contents into the open air, preventing contamination from the bilges and hold by creating a constant current of air flowing through the timber spaces. The timbers will be effectually ventilated, and dry rot prevented. Probably, even if the ship were built of unseasoned timber, all endemic causes of disease existing in the ship, and which occasionally cause, or at least promote, the ravages of fevers in tropical climates, will be removed by this plan. In most cases of malignant fevers occurring on board ships in the Royal Navy, the bilges and timber spaces have been found choked with decaying matter; and there can be no doubt that in the mercantile marine similar causes prevail, with leakage from cargo superadded.

In the reports of the Social Science Association, it is stated that, notwithstanding the great advantages of selection, diet, and discipline enjoyed by the Royal Navy, the rate of mortality is much above the civil population; whereas, from the healthful life led by sailors, being removed to a great extent from many causes of disease, we might fairly expect them to enjoy better health. To complete the ventilation of the decks, channels are provided. These are nothing more than the substitution of a strongly constructed air channel, in place of one or more of the planks forming the ceiling on each side of the deck to be ventilated. These planks vary in thickness from three to five inches, in a channel of the same depth, and from eight to twelve inches in width, in proportion to the size of the ship, and can be constructed so that the iron plate completing the channel above may also act as a stringer plate, greatly increasing the longitudinal strength of the ship. It occupies no apparent space, and is in the best possible position for ventilating the decks, as it acts immediately upon the air between the beams where all the foul, heated, and

rarified air collects. The deck channels are ventilated similarly, with openings into the main shaft. Together they form a perfect system of ventilation in steam ships, as nearly as possible self-acting, available where ventilation is most needed, and causing no draught, as the action is diffused by communicating cross channels, two sides of each being formed by a portion of the cross beam and the deck, completed by a thin wooden batten perforated with holes. It will be seen that this system promotes natural ventilation, through aiding the escape of foul air, and providing outlets in the most convenient places for it. The funnel draught is most powerful at all times, but particularly when steam is up. Hollow iron masts, forming three outlets for discharge, are equally effectual in steam or sailing vessels, as they have a constant powerful updraught. Tube and cowl ventilators in connection with these shafts are available in sailing ships, with the advantage of being used either as uptakes, or, when a fresh dry wind is blowing, the cowl may be faced to the wind, when a stream of pure air will be forced through the ship. By either mode the deck atmosphere will be rendered pure. But, as a rule, ventilation by exhaustion is to be preferred. Pure air will naturally take the place of the foul, admitted through hatchways, ports, and scuttles. Other means of ventilation are also available in connection with this system of shafts, such as a steam jet, fans worked by hand, or a fire draught otherwise applied. With this plan of ventilation, the practice of stuffing the timber spaces with tons of salt, or other protecting substances against dry rot, is totally unnecessary. The existence of foul air in the hold, damaging cargo, as well as causing disease and discomfort, is impossible. The shafts and channels are of easy construction, and, once established, are always available.

Doctor Edmunds' system has already been introduced, by order of the Lords Commissioners of the Admiralty, on board Her Majesty's ship "Royal Sovereign"; the "Zealous" iron-cased frigates; and the "Favourite." Although under great disadvantages as regards ventilation, necessarily attendant upon their construction, and not having side ports or scuttles, still they will be undoubtedly the best and most healthfully ventilated ships ever built. With respect to the application of his system of ventilation to emigrant ships, I have received from Dr. Edmunds the following observations:—"Of all classes of ships in which ventilation requires the most careful consideration, emigrant vessels occupy the first place. In them we have large numbers of helpless men, women, and children, mostly for the first time in their lives crowded together in the narrow decks of a ship; unused to the motion of a vessel, they become physically prostrate, and mentally depressed; and, but for the excellent rules of Her Majesty's Emigration Service, carried out under the direction of experienced medical officers, their condition would soon become most deplorable. But even under present advantages it has been found impossible to effect perfect ventilation of those crowded decks. Effluvia from the hold still further contaminate the air already vitiated to a great extent, particularly in calms and in bad weather, when it is necessary to close the hatches more or less. It is at these times that the foul air from the holds and bilges becomes most apparent and injurious, collecting chiefly in the highest part of the deck. It is only under exceptional circumstances that the carbonic acid evolved by the lungs or generated by vegetable decay escapes."

Most of the endeavours to ventilate ships have been directed to supply fresh air chiefly by windsails, but they are too uncertain; and in calms, when most needed, are valueless. Those only who have been becalmed in an emigrant ship on the Equator can fully comprehend the stagnation of air which prevails, particularly during the prevalence of heavy rains, which compel the passengers to remain below. The introduction of air in the ordinary way cannot be always accomplished without creating an amount of damp and discomfort, especially to those berthed in the vicinity of the windsails; and nothing is more common than to find the mouths tied up, passengers preferring the close and vitiated atmosphere to a cold damp draught from the windsail. When we remember that the apertures in the ship's lining are at the same time discharging the foul air from the hold, we can understand the utility of enclosing those openings in the longitudinal tube connected with the perpendicular air shaft, which conducts the objectionable air into the atmosphere. As the heated and vitiated air escapes through the cowl-headed ventilator, cool and pure air occupies its place in the hold and between decks, so long as there is any wind. During calms it is necessary to have some supplemental means of keeping up a circulation of air throughout the ship: a steam jet here becomes a valuable and powerful auxiliary, always available when the aerial current fails us.

The steam jet is directed into the shaft, and escapes through the cowl ventilator, which when steam is used must be turned from the wind; it should be placed near the centre of the ship, and for a vessel of

* Read by Dr. J. M. Barry, at Evening Meeting of Royal Dublin Society, and published in their Journal.

1,000 tons ought to be two feet in diameter. Through this every upcurrent of one foot per second velocity will discharge 10,800 cubic feet per hour of foul air—with a breeze blowing, the velocity will be about ten feet per second; this is amply sufficient to renew thoroughly the vital air in every part of the structure, without creating the least perceptible draught. During the day the air is drawn equally from the passenger deck, hold, and bilges, but at night almost exclusively from the passenger deck, the hatches communicating with the hold being then closed. The respiration of an individual during one hour is estimated at about ten cubic feet, the quantity mentioned as carried off; and an equal quantity of fresh external air introduced is at the rate of 400 cubic feet per hour for each of 250 individuals. The source of the steam jet in vessels propelled by sails is the condenser. The difficulty of stowing sufficient water in a ship for a long voyage has led to the use of distilled water, which is found, when properly aerated, to be perfectly sweet and wholesome; therefore a distilling apparatus is provided in Government emigrant ships, from which a supply of steam can always be obtained, of course diminishing the quantity of condensed water, which a few additional hours' distilling will compensate for, and will, in lieu, create at the time of the greatest need a "circulation of air" of vital consequence to the health of the emigrants. The action of a jet of steam is well known to carry up with it a quantity of air in proportion to the pressure from which it is liberated: a half-inch jet at 20 lbs. pressure, escaping at the rate of 2,000 feet per second, led up a ventilator of two feet diameter, will exhaust the air through it at a velocity of twenty feet per second. But, though this is the manner in which it has been hitherto used, one-fourth the quantity of steam divided into a number of minute jets will create a draught of equal strength, with the additional advantage that the escape of steam is almost silent, whereas a large jet creates considerable noise. It will be seen that this velocity of 20 feet per second circulates upwards of 20,000 cubic feet of air per hour, double that caused by the unaided action of the wind, and at a time when such increased ventilation is so much needed. In iron ships, where timber spaces do not exist, or some vessels of war in which they are blocked up, the deck channel becomes available as a perfect means of communication with the mess deck. In steamers, the necessary updraught is created by connecting the shaft with the funnel up which there is always a draught of from four to eight feet per second, and when steam is up from twenty to twenty-five. Hollow iron masts, which are now coming into very general use, are valuable ventilators in connection with this system; they have a constant updraught of from four to ten feet per second. Doctor Edmunds has recently received a report of the practical working of the system, first employed in the "Royal Sovereign," in 1863, for the ventilation principally of the ship's framework, otherwise totally unprovided for; it answers this purpose perfectly, removing all foul smells from the bilges, and keeping the air of the between-decks pure; its utility is proved by their foul state returning whenever its action is suspended. Captain Sherard Osborne writes:—"I consider your apparatus well qualified to ventilate the decks of ships devoid of scuttles or ports, and I attribute to it much of the health and comfort my crew enjoyed in 'the Royal Sovereign.' Doctor Elliott, surgeon of the ship, states:—"I have much pleasure in bearing testimony to your system of ventilation, which has acted so thoroughly in removing the foul air from the bilges and hold of this ship; I consider it one of the best sanitary measures introduced on board Her Majesty's ships." The Admiralty have directed Dr. Edmunds to prepare plans for most of the ships now being built. In the commencement of the year 1864, Her Majesty's Emigration Commissioners, ever anxious to make the ventilation and other arrangements of their ships as perfect as possible, permitted Doctor Edmunds to carry out his system in three of the ships taken up by them—the "Art Union," the "Earl Russell," and the "General Caulfield."

The Report upon the working of the system specially required by the Commissioners has established its success. The surgeon superintendent of the "Earl Russell" reported to the Commissioners that it was the most perfect system of ventilation in theory and practice he had ever seen. Dr. Carroll of "The Art Union," in the course of an elaborate analysis of its effects, states that in the hot latitudes he found the temperature between decks lower than he had ever before experienced; very little unpleasant smell was observable in the between decks, and the heated and foul air that is usually observed arising at night and from the deck ventilators was in this instance absent. In the calms about the Equator the steam jet was much used; the temperature during its use was reduced, and a very perceptible draught created, evinced by holding a candle at the air holes, and the strong current observable at the cowl head. In "The General Caulfield," in which ship I had an opportunity of testing Dr. Edmunds' apparatus, the results

were fully in accordance with the foregoing statements. While the steam jet is in operation very little water can be obtained from an apparatus capable of distilling 500 gallons of water per day of twelve hours. An extra quantity of coal must therefore always be estimated for; I should say about ten tons, the cost of which is quite insignificant in comparison to the valuable results accruing from the use of this apparatus. In a sanitary point of view, independent of the use of the steam jet, and depending on the wind, I consider it a vast improvement, superior to any other system of ventilation I have ever examined in the course of my experience in superintending emigrant and passenger ships; and I can only conclude that in Dr. Edmunds' method we have every requirement to ensure the effective ventilation of vessels of war and passenger ships. In directing its adoption generally in the ships taken up for the conveyance of emigrants, Her Majesty's Emigration Commissioners have not only conferred a great boon on these poor people, by making their temporary abode upon the waters more healthful and agreeable, but the ships will also, in consequence of their timbers being kept dry and ventilated, resist the dry rot, and last longer—although this in the eyes of the philanthropist is a very secondary consideration to the preservation of life and health at sea. By conducting the steam jet into the ventilator we increase the current, and thereby discharge the foul air more rapidly—the conclusion arrived at being, that if we succeed in discharging the foul air, the vacant space will be occupied by pure. In the case of steamers we conduct the channel into the funnel, or, if preferred, connect it with the fireplace. As to the adaptability of the system for ventilating houses, I think a very simple arrangement would prove effective, by lifting some of the boards in each room, and converting the space between the joists into a box three sides air tight, the bottom perforated with minute apertures penetrating through the ceiling of the room below, the air box to communicate through the medium of a tube with the flue, the updraught in which would be precisely similar to the funnel draught in steamers. By this simple arrangement the flues of rooms, at all times valuable ventilating agents, will be rendered more perfectly so, and the heated air of a room, ascending to the ceiling, more effectually carried off. To a certain extent also I should imagine this arrangement would be a remedy for smoky chimneys. To insure a supply of pure air, not generally obtainable in close narrow streets inhabited by a large population of the working classes, I would suggest an opening in the ceiling of the top landing, terminating in a cowl ventilator on the roof, arranged to turn with and towards the direction of the wind. This would insure the purest air obtainable being supplied to the staircase, hall, and passages. In the skirting board of the rooms the insertion of a perforated plate would admit this purer atmosphere. I should be glad to have the opinion of practical men as to the expense of this ventilating arrangement. I cannot think it would amount to more than a few pounds; and surely the owners of property let in tenements would not hesitate, if this may be deemed an important sanitary measure, to tax themselves in a small degree to increase the health, promote the happiness, and prolong the lives of a large and important section of the community.

THE ROYAL IRISH ACADEMY.

THE Royal Irish Academy has done good service to Ireland during the last seventy or eighty years in aiding the general advancement of knowledge in the country. With the three departments of knowledge for which it was originally founded—science, literature, and antiquities—the Academy can, in recent times, proudly associate the names of such men as Hamilton, Romney Robinson, Lloyd, and Graves, in science; of O'Donovan, Eugene O'Curry, Whitley Stokes, and Gilbert, in Celtic philology and historic literature; those of Todd, Reeves, and the ever-to-be-lamented Petrie, in ecclesiology and antiquities; and Wilde and others as more especially elucidators of the silent memorials of pre-historic times. The founder and first President of the Academy, the great Earl of Charlemont, left the indelible impress of patriotism, nationality, and statesmanship on his country's history, by deeds still echoed back to us from the walls of old Dungannon Church, and living in the glorious memories of the Volunteers, whose guns gained free trade for Ireland; and lastly, by his wise and noble domestic policy, which led to the establishment of the Royal Irish Academy as a centre and source of intellectual life and light. The Earl was succeeded in the presidency by the eminent chemical philosopher, Kirwan, a Galway gentleman, then resident in Dublin, who occupied the post with great credit and distinction till his death; for at that time, and until recently, the office was for life. His successor, the Earl of Charleville, was a nobleman of worth and considerable intelligence, as proved by his

writings in the transactions of the learned body, and with him ends the line of noble presidents; for the position of the country after the legislative union was such that no resident nobleman of sufficient acquirements, and also a member of the Academy, could be found to fill the high office of president, although the Royal Society of London has, up to the present day, elected the majority of its presidents from the ranks of the nobility. From Lord Charleville's death up to the present time our honored university has supplied seven presidents, and this connection with the Academy has largely contributed to extend the reputation of many of the leading magnates of Trinity College. Brinkley, afterwards Bishop of Cloyne, begins the series. He was followed by the two Lloyds—the distinguished Provost, and his still more distinguished son; Sir William Hamilton, the greatest mathematician of the century; Romney Robinson, renowned in so many branches of science; Dr. Todd, whose erudite and eloquent "Life of St. Patrick," and profound investigations into the position of the early Church in Ireland, insure him a permanent place in the literature of our country; and lastly, the existing President, Dean Graves, equally eminent in science and literature, who has so ably sustained the honour and dignity of the Academy, administered its laws with such justice and wisdom. According to present usage, the presidency only lasts five years, and it becomes vacant on the 16th of this month for the eleventh time. We have much pleasure in stating our belief that one of the most distinguished of our resident Irish noblemen, Lord Talbot de Malahide, will be elected to fill this important position; and it is perhaps well for the interests of the Academy in the selection of a president occasionally to return to the nobles, from whom it derived its first head. Amongst the Irish nobility eminent for love of literary pursuits, scientific research, and antiquarian investigation, such as Lord Rosse, Lord Dunraven, Lord Kildare, Lord Dufferin, Lord George Hill, &c., the name of Lord Talbot de Malahide stands high, and in genuine patriotism and warm nationality he is second to none. Lord Talbot de Malahide has also filled the office of President of the Royal Geological Society of Ireland and of the Archaeological Association of Great Britain, and his position as a member of the House of Lords gives him considerable influence, which may justly be exerted on behalf of the Academy.—*Express*.

COMPETITIONS.

THE following petition was presented to the House of Commons on March 15th, by A. J. B. Beresford Hope, Esq., M.P.:

TO THE HONORABLE THE COMMONS OF THE UNITED KINGDOM IN PARLIAMENT ASSEMBLED.

The Humble Petition of the Institute of British Architects under their Common Seal,

SHEWETH,—That your Petitioners have understood that it is in contemplation to rebuild the National Gallery, and that it is the intention of the Government to select the architect out of a very limited list of competitors.

That your petitioners earnestly press upon your honorable house the desirability of the competition being enlarged, and that a greater number of architects be invited to compete, both in order to secure the best design by the wider opportunity thus afforded to able men to submit their respective ideas, and to afford to the architectural world the opportunity of that honorable distinction and generous rivalry which a sufficient competition can alone afford. And your petitioners will ever pray.

L A W.

At the recent assizes for the Co. Antrim an action was brought by Mr. Fair, builder, to recover from Mr. Nathaniel Wood, merchant, the sum of £1,092 15s. 7d. Plaintiff had been employed to build five houses for defendant near Belfast, and had been paid £2,256 on account; after giving credit for which sum, there appeared the balance above stated as due. Defendant pleaded that the work was to be done by contract for £3,000; that he was to have the power of supplying some of the articles; that the articles so supplied by him amounted to about £524. He also pleaded that the whole of the work was to be completed before the payment of any money, and that the contract was not completed according to the specification, nor within the period previously stipulated; further, that the money paid was sufficient for the work done. The plaintiff denied the statements in defendant's pleas, and that they were not true. He also said, assuming there had been an agreement, that it was afterwards altered. Verdict for plaintiff, £519 8s. 8d. and costs.

CORRESPONDENCE.

THE NEW PRESBYTERIAN CHURCH,
WATERSIDE, DERRY.

TO THE EDITOR OF THE DUBLIN BUILDER.

SIR,—My attention has just been directed to a paragraph in the DUBLIN BUILDER of the 15th inst., on the opening of the above new church, and in which it is stated that the architect to the building is Mr. J. G. Ferguson. Mr. Ferguson will, I am sure, feel content to receive any credit due to him as *clerk of works* in carrying out my design, without desiring to usurp the merit to which I alone may be entitled as *architect* of the building.

My design for the church and manse (the former now completed), was selected in competition, and a nominal sum of twenty pounds, as first prize, paid to me. The committee having stipulated that detail drawings and specifications should accompany each design, and being supplied with the same, were in a position to dispense with my services, and to deprive me of the remuneration to which I was justly entitled, for superintending the carrying out of my own design. I have now before me a letter received from the Rev. Mr. Corke, stating that Mr. Ferguson had agreed to superintend the erection of the building, *from my drawings*, for a sum of forty pounds, or about 1½ per cent. on the outlay, the committee being fully aware that I would not consent to superintend it for less than the usual fee of 5 per cent. The saving thus effected (about £100) was the only excuse offered for what I consider an act of injustice towards me, but feeling remonstrances would be but waste of time, I allowed the matter to drop.

The committee, having done a service to Mr. Ferguson, and economized at my expense, must not be permitted to ignore my position as architect of the building, and transfer the merit of the design to one who has not a shadow of claim to it. I might be able to afford the former, but I cannot afford the latter. Trusting in your sense of fair play in asking you to insert this letter, I remain, sir, your obedient servant,

WILLIAM HAGUE, jun., architect.

175, Great Brunswick-street,
17th March, 1866.

NOTES OF NEW WORKS.

A new branch office is about to be commenced in Corn Market for the Royal Bank, upon a most advantageous site, having a frontage of 33 ft. by 57 ft. in depth. The building will be of Italian Gothic character; the office front with columns, carved caps, bases, window heads, &c., executed in limestone. The ground floor affording a vestibule and public office, extending from front to rear, with manager's office and teller's departments; the strong rooms and money safes being in the basement. The upper storeys arranged as residence for officials, with kitchen offices, &c., on top floor. Mr. Charles Geoghegan, architect to the bank.

An extensive range of model dwellings for workmen is about to be commenced by Messrs. Walpole, Webb, and Bewley, the eminent shipbuilders, upon a site convenient to their extensive ship yards. The buildings will be in eight blocks, affording every domestic accommodation and convenience for thirty-two families, four being provided for in each house, with spacious airing and drying grounds in the rear, the want of such improved dwellings being much felt in that locality by their numerous skilled operatives. Mr. Charles Geoghegan, architect.

Plans and estimates required up to the 10th inst. for heating with hot water and lighting with gas the church of Clooney, county Londonderry.

A new reading-room or lecture-room is to be built at Cloughfern, Whiteabbey, near Belfast.

The foundation-stone of a new Orange hall is to be laid at Mealough, county Down, on the 2nd inst.

A new linen warehouse is to be erected in Linen-hall-street, Belfast. Mr. A. McAlister, architect.

Rathkeale bridge, county Limerick, is to be repaired at a cost of £150.

Tenders to be received up to the 7th inst. for erecting a dwelling-house at Warrenpoint, County Down. Mr. W. J. Barre, architect.

A contractor required by Messrs. Molyneux and Ferguson, Belfast, to construct a new street off the Antrim-road, Belfast.

The Caher Abbey Mills, once the property of the Messrs. Sargent, have been purchased by an enterprising firm, who have placed in it, for wool spinning and weaving purposes, some of the very latest and most improved machinery, to the value of £10,000, proposing to make articles from the woollen yarn to the finest cloths and cassimeres, and with every prospect of realising their most sanguine expectations.

The old silk mills, Eliza-street, Belfast, have been recently altered and fitted up as a church for the Wesleyan Methodist body. The building, which will accommodate 300 people, was opened on the 25th ult.

The Windele Monument is to take the form of an ancient Irish cross, similar to the one at Clonmacnoise. Mr. Patrick Scannell, of the Douglas-street Marble Works, Cork, has been declared contractor.

The following new works are contracted for and in progress; Mr. Wm. Hague, jun., architect:—

New rent offices in Wilton-place, for trustees of the Earl of Pembroke. Amount of contract, £2,250. Mr. J. H. Askins, builder.

Extensive additions and alterations to Currygrane House, county Longford, for James Wilson, Esq., J.P. Mr. Hugh Kelly, Granard, builder.

New R. C. church at Templeport, diocese of Kilmore, as a memorial to the late Father Tom Maguire, of Ballinamore. Amount of contract, £2,000. Same builder as last.

An agent's residence near Bantry Bay, county Cork, for Lord Charles P. Clinton. Expenditure about £1,220.

MISCELLANEOUS.

ORGANS IN NEW CHURCHES.—There is hardly a greater discomfort possible to the organ-player, or a more effectual hindrance to the production of proper musical effect, than the custom of packing him away underneath, or in the midst of, or perhaps even inside the instrument; and it is surprising that the defective architectural arrangements of our churches so often compel the organ-builder to resort to expedients which ruin the instrument and waste the money of those who subscribe for it. One would think, by the thoughtless manner in which the organ is boxed up in many of our new churches, that it never entered the architect's head that his building was destined to contain one.—*Musical Standard*.

Owing to the advanced price of coals, and the increase in the rate of wages, the proprietors of the Whitehall Lime Kilns, county Antrim, have raised the price of lime to 11d. per barrel.

Lord Talbot de Malahide has been unanimously elected President of the Royal Irish Academy.

The Royal Geological Society of Ireland have published the first part of a new volume of their journal, which contains several illustrated papers on the geology, physical geography, and palæontology of the island.

Wycliff's Church at Lutterworth is to be restored by subscription, the edifice having been pronounced unsafe.

The monument to John Bunyan, at Bedford, is to take the form of a large and handsome school, to be named after the author of "Pilgrim's Progress." The cost is estimated at nearly £3,000.

"Scotch Lovers," by our celebrated countryman, D. Macleise, R.A., has been sold by Messrs. Foster, Pall Mall, for four hundred guineas.

A letter from Rome states that Mr. Brennan, a clever young Irish painter, sends several works to the Exhibition in Paris and the Royal Academy in London.

The applications from Ireland for space in the Paris Exhibition of 1867 are very few—indeed we might say miserably few. The entire number is only forty-five, which are thus divided—Dublin, 27; Belfast, 11; Cork, 4; Limerick, 1; Queenstown, 1; Skibbereen, 1. We may add to this list one interesting application from the Cork Flax Spinning and Weaving Company, for "linen yarns"—which application has been lately put in.

On the 23rd ult., during the gale, a chimney, sixty feet high, fell off the Eden Cottage flax mills, near Shane's Castle, Co. Antrim, belonging to Mr. W. J. Scully. It fell through the roof of one of the rolling-houses, breaking down part of the roof of a flax shed. Fortunately, no person was injured, as the mill was not working at the time of the accident.

On the evening of the 24th ult., Messrs. Roe's malt-store, situated in Murdering-lane (a narrow thoroughfare leading from James's-street to Bow-bridge) fell to the ground. The greater portion of the building, and about 3,500 barrels of malt, value £7,000, fell out on the public thoroughfare. Two children, aged respectively six and four years, who were passing at the time, were buried beneath the debris, but were afterwards extricated without having sustained much injury.

The Count of Flanders is making a tour in Italy, the object of which is said to be to study the most remarkable architectural monuments in that country, the Count wishing to have a palace built for him in Belgium on the old classic model.

A novel application of electro-magnetism, as a motive power for clock work, has just been perfected by a working jeweller at Leamington. By a new arrangement the pendulum, the bob or ball of which consists of an electro magnetic coil, is made to oscillate by means of a feeble current of electricity, this beating true seconds, with a train of three wheels only. One of the advantages of this system is that a number of clocks in different parts, or even in different houses, can be connected together by a single wire, and the whole number will indicate the same time to a second. The clocks are of the simplest construction, and never need winding up. No acid battery is used.

TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

All Communications respecting the DUBLIN BUILDER, should be addressed to Mr. PETER ROE, 42, Mabbot-street, to whom all payments for Subscriptions and Advertisements must be made.

The back numbers of this Journal, from its commencement in January, 1859, can be had on application at the office.

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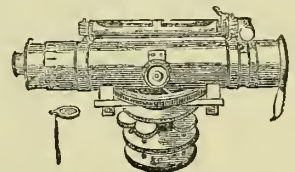
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TESTIMONIALS.

From WILLIAM TITE, Esq., M.P. for Bath, and Architect of the Royal Exchange, London.

House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have used both the sorts of Cement manufactured by your firm, and that of Messrs. Francis & Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good. I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant,

Messrs. White & Son. (Signed) WILLIAM TITE.
From R.O. MINNIE, Esq., Surveyor to Board of Ordnance, London.
War Office, Pall Mall, London, S.W.,
3rd March, 1864.

GENTLEMEN,—In reply to your request, I have much pleasure in stating my favourable opinion of the quality of your Portland and other Cements, which have been extensively used in the Public Works connected with the War Department at home and abroad, especially in several of the fortifications now being erected in this country. On all occasions within my knowledge the quality has been equal to that of any other manufacturer, and has given great satisfaction.—I am, gentlemen, your obedient servant,

(Signed) R. O. MINNIE, Surveyor.

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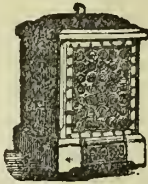
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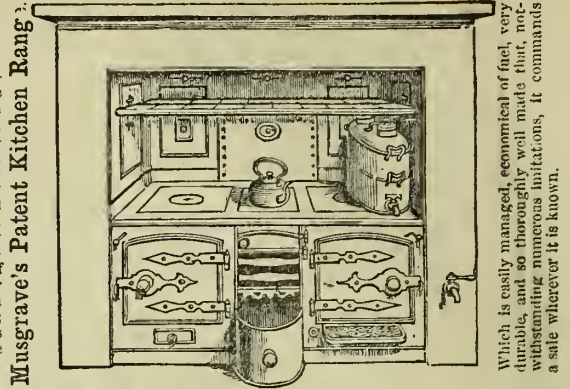
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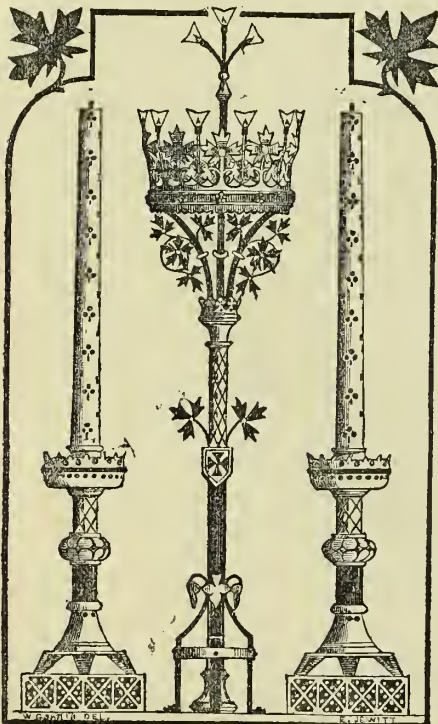
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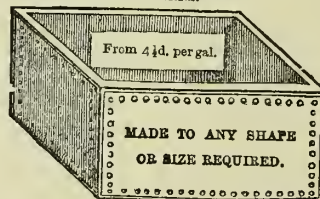
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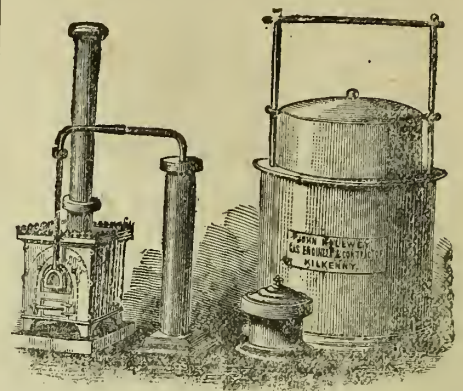
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W. E. STEELE, M.D., Assistant Sec.

AUCTION OF WOOD GOODS.

JOHN MARTIN and SON will SELL BY
AUCTION, on THURSDAY, the 26th of APRIL, 1866,
at their Timber Stores, NORTH WALL, at One o'clock, the
Cargo now landing ex "Rienzi," from St. John's, N.B., con-
sisting of—

16,400 Pieces Fresh Cut, Bright Spruce Deals, Plank and
Battens.

76 Pieces Birch Timber, clean and large.

17,000 Pieces $\frac{3}{4}$ feet Paving Laths.

30,000 Pieces 4 feet Sawed Laths, Pine and Spruce.

And the following Parcels in yard:—

100 Pieces Yellow Pine Timber.

120 Pieces Red Pine Timber.

110 Pieces Sundewall Timber.

50 Pieces American Oak Timber.

5,000 Pieces St. John Spruce Deals, well seasoned.

6,000 Pieces Lower Port Spruce Deals, sound and good.

Further particulars in catalogue.

JAFFRAY BARCROFT, Broker and Measurer.

AUCTION OF WOOD GOODS.

WM. CARVILL will offer by AUCTION,
on THURSDAY next, 19th APRIL, in the CUSTOM
HOUSE DOCKS, DUBLIN, a large and well-assorted variety
of North American and Baltic Wood Goods, comprising
Quebec Oak, Elm, Red and White Pine Timber, large and
clean, chiefly Fall imports; Quebec Pine, Plank, and Spruce
Deals, St. John Deals (choice lengths, bright and fresh),
Memel Timber (Crown and best Middling, Lathwood, &c.).
Sale to commence at One o'clock sharp.

J. BARCROFT, Broker.

Dublin, 29th March, 1866.

Now discharging a Cargo of WYATT'S BANGOR
SLATES, assorted, QUEEN TONS, PRINCESSES, 24 x 12,
20 x 10, 18 x 10, 16 x 10, 16 x 8, 14 x 8, 13 x 10; will be sold
low previous to storing.

TO CONTRACTORS, WHARFINGERS, &c.

THE BATH STONE COMPANY (Limited)
are desirous of negotiating with a respectable, well-con-
ducted firm with a view to the establishment of a DEPOT in
Ireland for the sale of their Bath Stone on Commission.

Address—E. A. TUCKER, SECRETARY,
4, RAILWAY-PLACE, BATH.

TO ARCHITECTS, COUNTY ENGINEERS, &c.

A Royal Coat of Arms, as well as a Figure
of Justice, in Terra Cotta, suited for Surmounting a Jail
or Court-house, or any class of Building; also a Group of
Figures forming a Clock, adapted for fronts of Business
Houses, Public Buildings, Courtyards, &c. The above may
be seen at

THE M'ANASPIES,
STATUARY ARTISTS AND STUCCO PLASTERERS,
81, GREAT BRUNSWICK-STREET, DUBLIN.

THE ROYAL EXCHANGE ASSURANCE.

(Incorporated A.D. 1720, by Charter of George the First.)
CHIEF OFFICE—Royal Exchange, London.

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FIRE, LIFE, and MARINE ASSURANCES on liberal terms.
LIFE ASSURANCES with or without participation in Profits.
Divisions of Profit every FIVE YEARS.
Any sum up to £15,000 insurable on the same Life.
The cost of Policy Stamps and Medical Fees borne by the
Corporation.

No extra charge for service in the Militia, Yeomanry, or
volunteer Corps within the United Kingdom.

A liberal participation in Profits, with exemptions under
Royal Charter from the liabilities of Partnership.

A rate of Bonus equal to the average returns of Mutual
Societies, with the additional guarantee of a large invested
Capital Stock.

The advantages of modern practice, with the security of an
Office whose resources have been tested by the experience of
NEARLY A CENTURY AND A-HALF.

FIRE ASSURANCES effected on every description of property
at current rates.

FARMING STOCK assured generally at 5s. per cent. per
annum.—The use of Steam Threshing Machines allowed
without additional charge.

Tables of Rates, Scale of Bonus declared, and all other in-
formation, may be had on application to

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No. 5, COLLEGE-GREEN, DUBLIN.

* * By whom Bank Stock, Government Stock, and Deben-
tures, and all other public Securities, are daily bought, sold,
and transferred.

SHEEPHOUSE LIMESTONE QUARRIES, DROGHEDA.

FOR Samples of the above Stone, the
Proprietors direct the attention of ARCHITECTS and
BUILDERS to the new Union Bank, College Green, Dublin,
the Lime Stone Dressings of which were prepared and fur-
nished exclusively from this Establishment.

For Prices, &c., apply to

A. & N. HAMMOND.

Sheephouse Quarries, or Office, John-street, DROGHEDA.

TO ARCHITECTS AND GENTLEMEN HAVING MAN- SIONS IN COURSE OF ERECTION.

HOGAN AND SONS, Stucco Plasterers,
General Cement Workers, Modellers, &c., 168, GREAT
BRUNSWICK-STREET, DUBLIN, beg leave to state that
they are prepared to undertake Contracts in the above line.

Ornaments for Cornices & Centre-Pieces for Ceilings supplied.
FRONTS OF HOUSES done in Portland or Roman Cement.
Materials supplied.

COUNTRY ORDERS strictly attended to, and first class
workmen sent to all parts of the country.

N.B.—Pattern Cornices enriched, on view at the Establish-
ment.

MESSRS. EARLEY AND POWELLS beg

to announce that Messrs. John Hardman and Co., of
No. 1, Upper Camden-street, have resigned the business of
Artists, Sculptors, Church Painters, and Metal Workers, in
their favour.

Earley and Powells have added to the above mentioned
business the Painting and Staining of Windows for ecclesi-
astical and domestic buildings, under the management of Mr.
Henry Powell, who conducted the Stained Glass Department
of J. H. and Co., Birmingham for many years.

Mr. Thomas Earley is the only Church Decorator living who
was taught his profession by the late A. Welby Pugin.

E. and P. being thoroughly practical men in each Depart-
ment, are enabled to supply real artistic work at a moderate
cost. They, therefore, respectfully solicit the patronage of
the Clergy and Gentry of Ireland.

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QUARRY CRANE.—TO BE SOLD, A

POWERFUL DOUBLE PURCHASE QUARRY CRANE,
complete, and in perfect order. To be seen at Colamore
House, Dalkey. Apply to

WELDON MOLONY, ESQ.,
19, UPPER MOUNT-STREET, DUBLIN.

BATH STONE OF BEST QUALITY.
RANDELL AND SAUNDERS,
QUARRYMEN AND STONE MERCHANTS, BATH.
 LIST OF PRICES AT THE QUARRIES AND DEPOTS, ALSO COST FOR TRANSIT TO ANY PART OF
 THE UNITED KINGDOM, FURNISHED, ON APPLICATION TO
BATH STONE OFFICE, CORSHAM, WILTS.

BATH STONE OF BEST QUALITY.
PICTOR & SONS, Quarry Owners and Stone Merchants, Bath.
 Corsham Down, Box Ground, Farleigh Down, and Combe Down Stone.

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THOMAS HENSHAW & CO.,
 WHOLESALE & RETAIL FURNISHING AND BUILDERS' IRONMONGERS,
 AND GENERAL HARDWARE MERCHANTS,
 5, CHRIST CHURCH PLACE, AND 15 AND 16, KENNEDY'S-LANE,

BE^G to call attention to their extensive, varied, and well-selected Stock of Ironmongery in all its different branches. It consists of Parlour, Drawing-room, and Bed-room Grates; Kitchen Ranges, Sash Weights; Iron Rim, Mortise, and Stock Locks; Hinges of all descriptions; Wrought and Cut Nails, O. G. Gutters, Down Pipes and Fittings, Metal Skylights, Ventilating Bricks; Cast-iron Chimney-pieces, with and without Grates; Rabbit Traps, Fox Traps, Galvanized Wire Netting, Sheet and Perforated Zinc, Sink Traps, Furnace Doors and Frames, Hot Air and Plain Stoves, Cast-steel Digging and Manure Forks, Slashing Hooks, Rakes, Spades, Shovels and Hoes.

Manufacturing and General Ironmongers and Tool Warehouse—81, MIDDLE ABBEY-STREET.
 Spade, Shovel, and Tool Works—CLONSKEAGH.

Agents for Perry's Patent Fire-proof Safes quality considered, they are the cheapest in the market. Builders are invited to inspect our Stock previous to purchasing, at

5, CHRIST CHURCH PLACE.

KITCHEN RANGES, with high pressure Boilers for Steaming or Bath purposes; Galvanized Iron Roofing, and Fencing Wire, best quality.

MILLARD AND ROBINSON,
 Are unequalled for
PHOTOGRAPHS of Buildings during erection, details of same, and finished Structures.
PHOTOGRAPHS of Plans, Drawings, Sculpture, Models, Carving, &c., for publication, contracted for.
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WINTER OVERCOATS.

OVERCOATS 20s. The Granville, from Witneys, Beavers, Pilots, &c. A fashionable Overcoat that cannot be obtained elsewhere at the price.

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OVERCOATS 55s. Made from Presidents, Dreadnoughts, Alexandra, and other new materials.

B. HYAM warrants his Overcoats to be THE BEST VALUE, FIT AND MAKE.

B. HYAM,
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BUILDING MATERIALS—Timber, Deals, SLATES, TILES, &c. Best Quality, and Moderate Prices.

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TO COACH BUILDERS AND HOUSE DECORATORS.
CHARLES TURNER AND SON'S
LONDON SUPERIOR VARNISHES FOR COACH PAINTING AND HOUSE
 DECORATING PURPOSES in all size Packages. Also
IBBOTSON'S IMPROVED OAK STAIN
 For imparting to New Deal the appearance of Oak, and to New Oak the appearance of Antiquity. The Stain (with the proper varnish, if required), of three shades—Light, Middle, and Dark—is sold in Bottles at 1s., 2s., and 2s. each, or by the Gallon, at 10s.
BOILEAU AND BOYD,
WHITE LEAD AND COLOUR STEAM MILLS,
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IMPORTANT
 TO ARCHITECTS, CONTRACTORS FOR CHURCHES, CHAPELS, SCHOOLS, AND OTHERS.

F. SWINBURN'S TRANSPARENT STAINING AND ANTI DRY ROT FLUIDS.
 These fluids are chemically prepared, and they not only colour and throw up the natural grain and fibre of all kinds of light woods, giving them a resemblance to old Oak, Wainscot, Mahogany, Satin Wood, Walnut, &c.; but they possess the highly important advantage of being clear and transparent, and a preventive against the ravages of Dry Rot. These stains, after a practical test of ten years, have been found to surpass all other stains, and where they have been used Dry Rot has not been known to exist.
 Architects and others ordering these fluid stains should see that they are used, as other materials of an inferior character are often substituted.
 The OAK STAIN of Four Tones of Colour, is sold ready for using, at per Gallon—Extra Deep, 7s. 6d.; Deep and Middle, 7s.; Pale, 6s. They require no sizing, except as a matter of economy to save varnish.
 Specimens, with Testimonials from eminent Architects, free upon application to
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 These stains may also be obtained in any quantity at the Warehouses of MESSRS. BOYD & GOODWIN, 6, Mark Lane, London; and MESSRS. DOBBIN & CO., 45 & 47, North-street, Belfast, where also specimens may be seen.

M. AMERY,
PICTURE FRAME MAKER, AND MOULDING MANUFACTURER,
 69, WELLS-STREET, OXFORD-STREET, LONDON,
 Informs the Trade and Public generally that he executes Wholesale and Retail Orders for every description of Frames, Fancy Wood, and Gilt Mouldings, on terms more reasonable, consistent with quality and finish, than any other House in Town.

THE INTERNATIONAL EXHIBITION PRIZE MEDAL, AWARDED 1862; ALSO THE DUBLIN MEDAL, 1865.
 ESTABLISHED 1744.

AUSTINS' IMPERIAL PATENT SASH AND BLIND LINES,
 TO BUILDERS, CARPENTERS, UPHOLSTERERS, AND BLIND MAKERS.
 J. AUSTIN and SON, Manufacturers of the above articles, particularly wish to direct the attention of the Trade to their
IMPERIAL PATENT FLAX SASH-LINES,

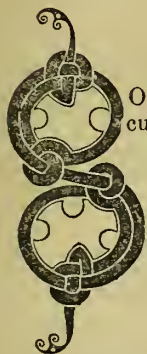
of which they are now making four qualities, and they strongly recommend that in all cases they should be purchased in preference to the PATENT LINE made from Jute, which article has neither the STRENGTH nor the DURABILITY of FLAX, consequently cannot give so much satisfaction to the consumer. They also invite the particular attention of Upholsterers and Blind Makers to their improved Patent Blind Lines, which are very much superior to anything yet offered to the Trade.
 They can be obtained of all Ropemakers, Ironmongers, Merchants, Factors, and Wholesale Houses in Town and Country.

The Dublin Builder.

VOL. VIII.—No. 152.

"BALD UNJOINTED CHAT"

SHAKESPEARE.



THE FALL OF A STORE.

SOME particulars about the circumstances which led to the fall of a store—a comparatively unimportant building—may be of interest. When accidents occur to buildings the facts of the cases are generally hard to be obtained, for reasons that may be easily guessed, but it would be most desirable for the building community if every accident were thoroughly investigated and discussed, as the teaching of one real disaster is worth that of a hundred mimic experiments.

About June last Messrs. Roe and Co. began to erect a small store adjoining the gable of an existing building; it was intended for a deposit house for malt from the kiln, and had a floor about 8 ft. from the ground level supported on iron columns, on which the grain was to rest. The interior dimensions above this level were 39 ft. 9 in. wide, across the gable of the old building, and 22 ft. 6 in. long; the three new walls were 18 in. thick of brickwork, the old gable forming the fourth one; the height from the floor to the foot of the rafter was 15 ft. 3 in., and it was roofed across its shorter span with a lean-to roof against the old gable, resting on strong framed principals. No tie worth noticing between the new work and the old at the quoins, appears to have been possible. Some difficulties of construction having intervened at an early stage, the assistance of Mr. Moyers, who was engaged on some other works in the establishment, was called in, and the building was carried on by his workmen, under his superintendence, according to the particulars dictated, Mr. Moyers agreeing to charge the Messrs. Roe with the first cost of materials and labour, and a fixed percentage of profit added. There were no plans or specification, and, it would appear, no accurate computation entered into on the part of the firm as to the amount intended to be stored. The building was completed about September last, before the severe season of the year, and was immediately put into use. About the end of March it had been filled with fresh kiln-dried malt not only to the wall-plate, but heaped up into the roof—in fact as full as it could possibly be packed. The value of the grain in it at this time was estimated at £4500, and its weight at nearly 300 tons. On the 24th of March the store fell, the walls from the level of the wooden floor up falling *outwards*, and described by an eye-witness as appearing to burst out somewhere about the middle of their height; the roof sliding quietly down on the grain which remained heaped up in a semi-pyramidal form against the old gable, the three outer sides of the base corresponding with the three new walls.

The conclusions to be drawn from this appear to be that this building, amply

strong for many purposes, was not sufficient for the extraordinary task it was called on to perform, more especially in its comparatively green state, and its imperfect tie to one of its sides. The pressure against each of its sides, in a lateral direction, may perhaps be roughly estimated at 80 tons. The more unaccountable part of the occurrence is how the walls stood under this weight for a short time previous to the 31st, and, as it is the "last straw which breaks the camel's back," directs to the exercise of some additional force which destroyed this evenly balanced trial of stability. This may perhaps be accounted for by the terrible storm of wind and rain which, it may be remembered, prevailed on the 23rd of March, and which may very possibly have driven the wet completely through one or more of the walls. Some wet may also, under such exceptional conditions, have found its way through a good roof, and although the mere shaking and saturation of the walls might be sufficient to turn the scale of stability, another hypothesis suggests itself which we would be glad to hear discussed. Fresh kiln-dried malt we may presume to be in a condition abnormally free from moisture, and consequently with an active affinity for its re-absorption. Any absorption of water must of course lead to a rapid increase in bulk. We do not pretend to say that this positively took place in this instance, but if it did, it would supply an additional motive power to accelerate the catastrophe.

A word as to the individual responsibility involved. As the name of a well-known builder has been freely mentioned in connexion with the failure, it is only fair that his position with reference to it should be stated. As before adverted to, the building was carried out by Mr. George Moyers from instructions supplied, or rather dictated without the intervention of any architect. The enormous load ultimately imposed does not seem to have been properly estimated, and those loading it afterwards do not appear to have possessed sufficient scientific knowledge to be aware of the excessive strain to which they were subjecting an ordinary building. On the completion of the work, Mr. Murray, who had been engaged in the superintendence of another building in the same establishment, certified to the *completion* of this store and to the fairness of the charges made in Messrs. Moyers' account to the Messrs. Roe, and thus claims to be free of all responsibility whatever, the building not having been erected under his direction and design. The occurrence must be regarded as an unfortunate accident, the result of non-acquaintance with well-known laws on the part of those using the building. A simple calculation will show that a wall of 2 ft. 3 in. thick would have been about the bare equivalent of the pressure, supposing, as may be assumed in the case of the two flank walls at least, little or no tie existed at both ends. It would be satisfactory for professional purposes if so full an investigation into the particulars of every building were attainable.

THE O'CONNELL MONUMENT COMMITTEE

Have advanced a step—whether it is an advance *backwards* or forwards remains to be seen—since we last had the honor of criticising their proceedings. In this interim Mr. Foley has declined to furnish a design for the whole work; he has subse-

quently consented if an architect is employed, and a satisfactory design produced to execute the statue of O'Connell, and, with the discernment of a true artist, impresses on the Committee that the monument should be essentially of an architectural character, and that his statue should not be placed farther out of the way than thirty feet. Upon the strength of this the O'Connell Monument Committee nominate a sub-committee to consider and report—they seem to be very fond of nominating sub-committees and considering, and adjourning, and reporting at the City Hall—and accordingly, a committee of three, including the chairman, consider and do report—on the Scotchman's principle of "ilka man his bird," possibly—that three architects, Mr. Butler, Mr. McCarthy, and Mr. Geoghegan, are worthy of the time and of the occasion, and that they recommend a selection of one from the honored trio by vote of the whole committee. After this consummation, they are of opinion that a sub-committee should be "appointed to confer with him (the architect) on other business and professional gentlemen;" whatever they may mean by this last rather misty observation. This report was, however, not received, and is to be on the table "for consideration" for another week. We do not desire to say anything derogatory to the abilities of the three gentlemen nominated, but still we think the field of choice for the Committee might have been made a little wider in good taste.

After disposing the question in this attitude we find an unexpected subject brought up, which, to tell truth, we never expected to hear of again, the payment of the premiums to the most meritorious of the unhappy and misguided competitors. To the honour of the working men of Dublin, we are glad to say, this partial rectification at the eleventh hour of a great injustice appears to emanate from their ranks, and, to the discredit of some persons higher in social position, that from them came all the petty quibbling and attempts at mean evasion of an honest purpose. The honest indignation of the humbler section of the Committee, through their efficient mouth-piece, Mr. Keegan, proved however too strong to be trifled with, and the point was carried in the main. The paltry sum of £200 is no great matter to the competitors, but the assertion of a principle and the removal of a grave stain from their character is of some consequence to the Committee. We should not, however, recommend any competitor just yet to overdraw his account at the bank on the strength of the premium he is to receive, although we have great faith in the ultimate triumph of simple-minded logic and earnest purpose like that of Mr. Keegan and his friends over the most ingenious sophistries of their meaner-minded opponents.

MR. STREET IN DUBLIN.

The first of the Afternoon Lectures at the Museum of Industry—or College of Science and Art, is it?—was crowded to excess by a fashionable audience on Wednesday last, attracted by the distinguished name of George Edmund Street. Mr. Street was as usual eloquent and thoughtful, and his lecture was only what might be expected from his thorough and vast knowledge of architecture of every country. For the architects, who mustered

in large numbers, his lecture was not of course intended, and had nothing very new or startling, and at the same time it had the misfortune to be *caviare* for the portion of the audience for whom it was intended. A Dublin audience is not likely to be a very advanced one so far as the study of ecclesiastical and mediæval architecture goes, and it is scarcely Mr. Street's fault if the paper, through which he galloped at such a prodigious rate, was as intelligible to most of his hearers, particularly the fair ones, as a book from the *Iliad*. Even the reporters for the press appeared unable to touch bottom from the time he started until his conclusion.

Architectural papers are rapidly promising to be a unique style of literature, and Mr. Street may have the honor of being the most distinguished leader of the school; may, to use a favourite word of Mr. Street's own, be described as of the "grandiose" school. In his hands, his manly energy of thought and earnestness of purpose relieves his utterances of all semblance of affectation, but in the mouths of his feeble imitators the "grandiose" style of paper reading is becoming a laughing stock. High-sounding quaint epithets are with him used for the sake of expressing his meaning best, while with the imitators they are chiefly affected on account of their imposing sound.

It is a sincere pleasure to have seen among us one whom perhaps most thoughtful architects look up to as the foremost man of their profession. An artist of rarely combined genius and industry, a diligent antiquarian, a real worker, an eloquent writer, and an accomplished gentleman. We should thank Mr. Street, too, for his loving advocacy of the claims of poor Christ Church Cathedral.

BATH STONE.

By reference to an advertisement in our columns it will be observed that a new company under influential local management has been established at Bath, for the purpose of working new quarries of Bath Stone. If the establishment of such a company will tend to introduce Bath Stone more extensively into the Irish market, it will have our best wishes, for it is unaccountable that for every purpose Caen Stone should continue to be used to the almost entire exclusion of the material nearer home in nearly every case where soft stone is required. Bath Stone, although inferior in some respects, such as closeness of grain, &c., to the best description of the French stone, possesses a warm agreeable tone of color which renders it a more effective agent in chromatic effects than its less pronounced rival. Heretofore it cannot be said to have been introduced into Ireland under favorable circumstances. In a climate more humid than its native one it is essential that the stone intended for external work should be selected with the greatest care and experience, under which conditions we do not hesitate to say it would be found a valuable and cheap material for many purposes. These precautions not having been sufficiently attended to the result has been that decay has rapidly exhibited itself in some of our buildings where it has been used, and has gained for the stone a most undeserved unpopularity. For interior purposes at all events its value is undeniable, and we hope under the auspices of the new company (who desire agents in Ireland) we may shortly find Bath stone easily available when we require it.

GOVERNMENT AID TO RAILWAYS.

I REPEATEDLY meet with suggestions in the newspapers of the day as to Government aid to Irish railways. This idea has assumed different forms

according to the various views of the several correspondents, but I do not remember to have seen as yet what appears to me to be the right principle enunciated. An eleemosynary tone seems to run through all the suggestions. Sometimes the public are to get the boon of cheap travelling, and sometimes the shareholders are held forth as objects of charitable consideration. Now all this appears to me to be wrong. There is not, and there should not be, any other way of rightly looking at the matter than as an opportunity of mutual advantage to the companies and the Government, by the formation of a closer connection between them. The basis of the connection is a very natural one—all the companies have, more or less, been compelled to raise money, in addition to their capital. From their credit—or in other words, the security they can give—not being of the first class, they have to pay dear for their accommodation. The Government, on the other hand, enjoy the highest credit, and can get money cheaper than any other individual or body, while the railway company finds difficulty in getting twenty years' purchase for the income it offers. The Crown even now, at a peculiarly trying period of the money market, command twenty-nine years' purchase for the same income. The company pays £50 a-year for every £1,000 it borrows; the Government only pay £35. It is easy to see, therefore, how an arrangement could be come to which would be very profitable for both parties; thus the Government can borrow money at three and a-half per cent.: let them lend it to the companies at four per cent. on mortgage of the line, with a proviso that the one per cent. saved to the company shall be invested as a sinking fund to reduce the principal sum. In order that such an arrangement should be put into proper working order, it would be necessary to restrict the companies in the way of procuring fresh liabilities—a restraint which is much called for as they are at present conducted, and which has tended more than anything else to injure the credit of the companies. I do not wish to encumber this letter with details, but I think it may explain my meaning more clearly if I give an example shewing the results of such an arrangement, thus:—

Let the capital of any company be £1,000,000, with borrowing powers to the extent of £30,000; an ordinary case with such a company is that it owes, in the shape of preference shares, and debts of one kind or another, £500,000, for which it is paying at least £25,000 a-year, omitting all the charges and expenses that invariably attend these "financing" negotiations. On the Government advance being made, the annual interest would fall to £20,000 a-year, the charges for negotiation would cease, and £5,000 would be disengaged as a sinking fund, which in ten years would amount, if invested in the Funds, to £60,000, which would reduce the debts to £440,000, paying £17,600 of annual interest, and leaving £8,400 a-year as the sinking fund, which in a further period of ten years would amount to about £100,000; at the end of a third period of ten years the original debt would be reduced to £210,000, and in twelve years more—making forty-two in all—would be altogether cancelled. The company would thus be enabled to cancel its debt in forty years without any increase of its annual payments; while on the other side the Government would have made about £80,000 by the transaction through the difference of interest.

Such is an outline of the sort of connection I should like to see established between the railway companies and the Government—an arrangement which would be mutually profitable in a pecuniary way, would leave the lines unfettered by Government control in managing the details of their traffic, and conduce mutually to render cheap travelling a thing possible by lessening the pressure on the receipts of the companies, and affording a sufficient margin to have the chance of reduced dividends for a time, on the speculation of ultimate permanent increase.

JAMES H. OWEN.

51, Park-avenue, Sandymount.

The painting of "Cromwell at Hampton Court," by Charles Lucy, Esq., is now on view at Messrs. Stark's Gallery, Lower Sackville-street.

PRECAUTION AGAINST FIRE.

WE are promised at no distant period, a supply of water to our metropolis at a pressure sufficient to reach the tops of our highest houses. We have at present in course of erection in the city several tanks and other public buildings, as well as factories in its vicinity, and we think that the adoption during their progress of a plan for an immediate supply of water in case of fire would be very desirable. The extract given below is taken from an article in the last number of *The Builders' Weekly Reporter* entitled "Fire and Water." With our anticipated water-pressure, the expense for fittings (if laid in during progress of works) would be comparatively trifling. Our contemporary says:—

"We must remember that London is a very large place; that, including its suburban populations, it embraces an area of 400 miles; that it is composed of no fewer than 380,000 houses, and that these are increasing with an almost fabulous rapidity. Private as well as public buildings, of the largest and most costly description, are rising up in its very midst, and these are as liable to be set on fire, or to take fire, as are any other buildings constructed of the same or similar materials. It appears to us that Messrs. W. H. Smith and Son, the extensive newspaper agents, must have reasoned in something after this way, when they constructed their premises in the Strand. In their publishing, as well as in their printing offices, they have taken the precaution of having a fire-cock placed on every floor. That this arrangement may be effective, they contract with the Water Company to pay one guinea *per annum* for each cock, which includes every possible demand for water in case of fire, and a quarterly trial of its power to play under the superintendence of the Water Company's officer. Within the buildings the arrangements are simple, yet complete. A connection is made to the Water Company's main, and a 3-inch pipe is hung upon an iron girder under the floor, and run along to the necessary extent. About the centre of the building a rising main is there carried up, and on each floor, at three feet from its level, the fire-cock is attached. This instrument was made by Messrs. Guest and Chrimmes, of Rotherham, and is composed of gun metal. It is kept properly screwed, capped, and sealed, the seal to be broken only in case of fire, and at the periodical trials. Immediately above the cock a case is placed with a glass door, in which are suspended a length of hose, of sufficient extent to reach every part of the floor, with all implements necessary to be used by a man who has fire to deal with. The object of the glass door is to enable the foreman, in going round the works day by day, to see that everything is in order and in its proper place. The door is under lock and key, so that for all the purposes of inspection, cleansing, oiling the hose, &c., ready access is given. As every moment is of consequence in cases of fire, and the key might be mislaid, the watchman is instructed not to wait to undo the lock, but at once to break the glass and reach the hose and jet. Experiment has shown that, under ordinary circumstances, a watchman would be able to play upon any part of every floor within two minutes of his discovery of ignition. These arrangements were carried out by Mr. Beggs, under the superintendence of Mr. G. F. Fry, the surveyor, of Messrs. Smith, and their value requires no comment."

As the names of Messrs. Guest and Chrimmes, of Rotherham, manufacturers of waterworks articles, are mentioned in the above paper, we may state that their agent in Dublin is Mr. J. B. Gilpin, 53, William-street, who will afford information as to the various gas and water apparatus, patent and otherwise, supplied by this firm, and who also has specimens.

THE LATE GEORGE RENNIE.

MR. George Rennie died on the 30th ult. This engineer was the eldest son of John Rennie, the builder of Waterloo bridge (the work of six years, although in solid granite), the Great Western Canal, and other works of the same class; also of Southwark Bridge, the drainage of Witham Fens, the London, and the East and West India Docks in London, the Prince's Dock, Liverpool, the Plymouth Breakwater, and Holyhead Pier, and the designer of London Bridge.—in fact, a giant of his kind. In the execution of many of these works, George Rennie assisted his father; and in conjunction with his brother, Sir John Rennie, designed and executed many more, among which are to be named dock-works at almost all the Government yards, the Bedford Level, Eau Brink Cut, many great harbours and English and foreign bridges, coining machinery, the great dock-gates of Sebastopol, and other works for the Russian Government, such as marine engines and machinery for various uses. Geo. Rennie constructed the Namur and Liege Railway, and that from Mons to Manage between the years 1846-49. He was born January 3, 1791, was a Fellow of the Royal and other learned Societies, and the author of many books on engineering science.

LORD TALBOT DE MALAHIDE'S INAUGURAL ADDRESS TO THE ROYAL IRISH ACADEMY.

GENTLEMEN, permit me, in the first place, to tender you my respectful thanks for the kind manner in which you have been pleased to elect me to the chair of this illustrious society. I shall always value it as one of the highest honours which could be conferred on an Irish gentleman. I am at the same time fully conscious of my many shortcomings, and am well aware that there are many individuals amongst you who have higher claims for this distinction from their researches in science, their discoveries in physics, their unwearied attention to the great questions of archæology, and their achievements in the field of polite literature. There is one man to whom we particularly owe this acknowledgment of his great services—I allude to George Petrie, on whom our late president passed so eloquent, so heart-stirring, and so deserving an encomium at one of our last meetings. Alas! he has left us, and it remains for the surviving members of our body to follow up his great discoveries, and to illustrate fully the pages of early Irish history. We must not, however, be remiss in our endeavours to secure for his family some recognition of his patriotism and some reward for his labours. I trust that the Government of this great country will not be deaf to our appeal on behalf of his bereaved family, and that posterity will be able to see a permanent memorial of him in the addition of his valuable museum to our national collection. It would be presumptuous on my part to dwell at any length upon the prospects of mathematical and physical science in this country. I feel quite incompetent to the task; but, thank God, I have imbibed during my academical education sufficient taste for science to be able to appreciate the great advance which has been attained in our days, both as regards analytical and geometrical processes, through the labours of the late Sir William R. Hamilton, and the other great mathematicians connected with our society. Within the last month science has lost one of its most ardent and painstaking votaries by the death of Professor Whewell, a gentleman who combined, with a complete knowledge of science in all its branches, a cultivated taste for literature, and an appreciation of every intellectual pursuit. I have taken the liberty of mentioning his name, as I feel proud of his friendship, which I have enjoyed for the last forty years, and have a melancholy pleasure in remembering that he was my guest at the last meeting of the British Association for the Advancement of Science in this city. The time has gone by when science was sneered at by practical men as useless, and a matter of pure curiosity. Its many applications to every-day life have of late attracted public attention, and the wonderful economic revolutions which have been witnessed during the last fifty years are entirely due to its influence. It is not equally well known how much the other branches of our society owe to the habits of patient induction and close reasoning, which have flowed from the adoption of the Baconian system. This part of the subject has more than once been curiously alluded to by some of my predecessors in the chair; but I trust that I shall be forgiven if I mention a few instances and examples by way of illustration. I may remind you of the assistance which astronomy has given to the investigators of history and chronology in the determination of the dates of the battle of Clontarf, and of Julius Cæsar's first landing in Britain by the consideration of the tides. I appeal to the triumphant efforts to decipher hieroglyphic and cuneiform inscriptions, and, though last, not least, the extinct Ogham character,—I appeal to the use of the microscope in confirming the traditions as to the fact of the skins of sacrilegious Danes having been nailed to church doors,—I appeal to the light thrown by chemistry on the curious questions connected with vitreous forts, on the composition of ancient bronze, on the nature of the colors of the ancients,—I appeal to the evidences which botany and comparative anatomy have brought to light on the dark periods of history, on extinct animals, on the origin and habits of primeval races. Lastly, I appeal to the great connection between scientific geology and archæology. These two pursuits have always been more or less connected, but they are becoming every day more closely interwoven with each other, and within the last few years the discoveries of Prof. Keller, of Zurich, and Mr. Boucher de Perthes, the deposits of Amiens and Abbeville, the crannogs of Ireland and Scotland, the lacustrine dwellings of Switzerland, Germany, and Italy, the caves of Sicily, France, Belgium, and England have displayed a new page in history of surpassing interest, but in which the calmest and most honest spirit of inquiry is required in order not to be run away by wild theories and extravagant assumptions. But perhaps the most glorious achievement of the present day is the progress of geology as a science. There are still a few survivors of that gallant band of philosophers who founded the London Geological Society. But what changes have they not witnessed in the progress of their science? Beginning as pupils

of Werner, they were compelled to adopt the theories of Watson and Playfair, based as they were on Sir James Hall's chemical experiments. The original ideas as to the formation of the so-called primitive rocks were completely demolished, and public attention was invited to the interesting phenomena of volcanos and the effects of metamorphism. The next step was the discovery by Cuvier of the test derived from the presence of fossiliferous deposits as a criterion of the comparative age of different formations. Thenceforth palæontology, unification, anatomy and conchology became essential parts of geological study. The chronology of secondary rocks under the guidance of Smith first assumed a definite form in these islands. The character of the flora and fauna of the old world developed itself gradually, showing the changes of climate and the gradual refrigeration of the globe. Here mathematics asserted their claims, and the questions of central heat, earthquakes, and the elevation of mountain chains were brought within the domain of pure science. The next discoveries were those which proceeded from the study of the Alpine glaciers. Agassiz and his followers have proved the prevalence of a glacial period, during which the temperature of the earth assumed a point of cold quite inconsistent with the previous and subsequent epochs. The character of the fossils, the dispersion of erratic blocks, the discovery of arctic animals in these temperate climes, corroborated this theory by independent results. The present aspect of the science is highly satisfactory. The formation of the geological science of these islands, the general adoption of similar undertakings in other countries, the publication of accurate geological maps on the continent, the researches of travellers in all parts of the world, are adding every day to an intimate knowledge of the formation of the crust of the globe. As a proof of what can be done to create a science even within the short life of man, I have thought it right to give this short review of what has been done in the matter of geology. I am well aware that we possess in this city an excellent society specially directed to the working out of this subject. I have long been a member of it, and can bear witness to its high position; but we cannot give up our connexion with any science, particularly one of so much interest and importance, and one of the great valves of an institution like ours is to direct and encourage the exertions of kindred societies, as well as to give a helping hand to those of our members who devote themselves to these pursuits. I trust, also, that we may have some valuable contributions on the subject of botany, physiology, and chemistry. It is desirable that the chain of our sciences should be maintained entire, and that the variety and originality of our papers should add interest to our meetings, and further increase the fame of the Royal Irish Academy. Polite literature has also always been engrafted on our institution, and in the early portion of our career our Transactions contain numerous contributions from this department. The course of time has, however, produced a change, and we have had to complain of late years of a paucity of papers on this subject. This may be ascribed to various causes. In the first place, æsthetic literature is everywhere on the decline. In former days we know the sensation produced by Edmund Burke's "Essay on the Sublime and Beautiful." The question of the tragic unities, of the comparative merits of the Greek and French tragedies on the one side as compared with Shakspeare and the Spanish school on the other, and in still more recent times between the Romancists and the Classicists, have had their day. The victory has remained with our national bard, and all interest is now concentrated on the powers of execution, and critical rules and dogmas are utterly discarded. Metaphysics again, which a few years since was so popular—a source of intellectual amusement—seem almost forgotten even on their favourite ground, the Scotch universities. I fear it must be admitted, with the prevalence of utilitarianism and political economy, poetry and the works of the imagination have fallen into the background. We still can boast of a Tennyson, and there are some beautiful poems by our transatlantic brethren, but lyrics and ballad poetry, in which Ireland still continues to excel, have displaced the epics and tragedies of our fathers. The progress of periodical literature and novel writing has also contributed to this result. Doubtless by this means a more general diffusion of a certain kind of knowledge and taste has taken place, but it is a question whether the desultory reading now so prevalent has not tended to wear young students from habits of close thought and from the perusal of standard works of literature. There always will be a class of educated men, the bent of whose mind will not be directed towards abstruse science, and polite literature has hitherto been their congenial pursuit. On this account it is most desirable that literature should be kept up to a high standard; and I cannot but regret the prejudice which seems to be on the increase against the study of the classics. It cannot be denied that in some of our public schools too much time has been devoted to the

practice of Latin and Greek composition, but I am sure it would be a matter of regret to find the Irish gentleman less able to appreciate the works of Homer, Virgil, Horace, and the great orators and historians of Greece and Rome in their own language. It cannot, however, be said that we have neglected all questions appertaining to polite literature. Philology is still popular, and the able papers of Dr. Hincks must occur to every mind. The efforts also which have been made to illustrate our Celtic literature must command the respect of every friend of Ireland. The publications of the Irish Archæological and Celtic Society, in which some of our members have had so great a share, have raised us much in the estimation of foreigners, and the edition of the Brehon Laws now in the course of publication is one of the most valuable contributions to the materials of history in our days. I need not say that these great works could hardly have been attempted without the assistance of two members of this Academy, whose loss we can never cease to regret. It now remains for us to digest thoroughly these materials, and to turn them to good account. Before doing so, however, it is most essential that a complete and reliable Irish dictionary should be compiled and printed. There are considerable materials already collected for this purpose, and our lamented member, the late Mr. Elliott Hudson, has placed a considerable sum at our disposal in order to carry it out. I trust that with a little exertion this great object may be attained. It is much to be regretted that no standard history of Ireland has yet appeared. There has been such an improvement in the mode of writing history—Kemble, Sappenburg, and Thierry have done so much for Saxon and early Norman times—Hallam, Lingard, Froude, and Turner have shown how much light can be thrown on history by availing ourselves of sources of information hitherto disregarded, and discarding traditions which are not supported by trustworthy evidence—that the time is almost ripe for systematising Irish history. It is true that the bitterness of party (although now much moderated among the educated and respectable classes) offers considerable difficulty in the way of an impartial statement of facts. However, I cannot believe that it would be a hopeless task to compile a fair history of Ireland up to the commencement of the 16th century. It is right that all Irishmen should have an opportunity of reading, in an authentic and trustworthy shape, the real history of their country. They ought to know all that can be determined as to the habits, customs, ideas, and general civilisation of their ancestors. Poison enough has been distilled from unauthentic sources. We require the honey which is sure to reward the candid inquirer. Doubtless they would have to wade through a chronicle full of great crimes and sometimes great virtues, but I feel confident that every candid man would rise from its perusal with a feeling of self-congratulation that his lot was cast in more peaceful times. In approaching the subject of archæology, to which, I must confess, I am enthusiastically attached, it would be out of place if I alluded in more than general terms to those details which can be studied with so much advantage in your proceedings and transactions. It is a subject full of painful recollections. We have lost within a few years O'Donovan, O'Curry and Petrie. Their loss is irreparable, but they have left a precious legacy behind them. Another painful subject is to hear on every side of the diminution of the respect formerly entertained by the peasantry of the country for ancient monuments, even for the tombs of their fathers. The difference between the present state of Clonmacnoise since it was first described by Petrie is lamentable. Even on the Continent, where revolutionary feelings at one time prevailed to such an extent that *bandes noires* were organised to demolish the last traces of national edifices, most of the governments have taken the matter up and stayed the hand of the spoiler. I appeal to those who can exert powerful influence over these classes, to endeavour to arrest the vandalism which threatens to deprive us of the few remaining memorials of old Ireland. Happily, among the upper classes of all creeds a reverential feeling prevails. In the restoration of St. Patrick's, due to the taste and munificence of our gifted friend, Mr. Benjamin L. Guinness, we see an augury of better times, and I trust that his conduct will produce a powerful effect on the public, although few if any of us would be able to follow so great an example. To advert to a more cheering part of this subject, it is delightful to find that the exertions of our archæologists are so unremitting, and that not a month passes without some addition being made to our treasures of ancient art and to our knowledge of antiquity. The most important of these discoveries is due to the excavations of Mr. Conwell in the neighbourhood of Oldcastle, under the patronage of the patriotic James Naper, of Loughcrew. The state of the museum is most satisfactory. The excellent *Catalogue Raisonné*, which has been compiled and published under the care of Sir William Wilde, has extended the sphere of our operations by diffusing an accurate knowledge of the specimens in our museum, and spread throughout the

scientific world, both at home and abroad, an increasing interest in these subjects. I understand that the sales have covered the expense of the publication, and that this great and laborious work, of which its accomplished author may be justly proud, will soon be completed. It has been suggested that a permanent director of the museum is much required. I fully agree in the propriety of the suggestion, and I trust that the committee of antiquities will lose no time in maturing a proposition to this effect. Our library is also most valuable. The collection of the Irish manuscripts is unrivalled. The want of a proper catalogue has been long felt, but I am sure that our librarian will leave no stone unturned to put it in a proper state. I am rejoiced to hear that the services of a competent transcriber have been secured. In conclusion, let us all singly and collectively work together to strengthen the hands of your council and the committees in their great work. We are, in a great measure, free from these jealousies and heart-burnings which are so fatal to the prosperity of our land. Let us continue to present a bright example of what can be done by a cordial union and co-operation of all classes, all parties, and all creeds—to heal the wounds of our beloved country, to diffuse a wholesome spirit of inquiry into all matters of scientific interest, to elevate the character of our literature, to discountenance those opinions which in some countries degrade man as a responsible and intellectual being, convert knowledge from being a blessing into a curse, sap the morals of the people, and discourage the efforts of those who are disposed to promote the true interests of their fellow subjects. Let us not despair of the future of Ireland, but trust, with the blessing of God, to see it a free, happy, and united land.

A COMMITTEE OF TASTE.

A LONG discussion, which terminated in a division unfavourable to the previous course of the Government, happened in the House of Commons, on Thursday evening, the 22nd ult. The subject was the appointment of a limited number of competitors for the honour of designing the Courts of Justice, and, by reflection, the like with regard to the National Gallery. Mr. Bentinck said he did not object to the liminary character of the competition, if the conditions admitted a sufficient number of architects, so that the judges should have full latitude of choice, and the tribunal be protected from charges of favouritism. This, we may assert, is not easily effected, and certainly not to be secured by the method of the speaker, who thought a properly-defined statement of the conditions of the battle, and a sufficiently large number of combatants, would protect a committee.

That protection would, we believe, be best afforded, and the most important requirement of the subject answered, by judicious fulfilment of Mr. Bentinck's third desideratum,—the appointment of a really competent jury, among whom men practically versed in architecture should be in number sufficient to make their opinions weighty; say, not fewer than one-third, but preferably one-half, of a committee of twelve. Of a jury of laymen, towards which the present fancy inclines, the profession, whatever may be the case with regard to its honour, has no confidence in its judgment on purely architectural matters. The public feels likewise. One result of this English plan of having an ostensible committee of amateurs to decide on a technical question is obvious when designs are exhibited. No end of pretty pictures, such as a professional jury would not tolerate, are then produced. These a member of the House of Commons truly characterized when he referred to their effective accessories,—the Queen's coach and six cream-coloured horses, or the magnificent officers of the Guards, who, arrayed in all their glory, prance before the eyes of M.P.s in the picture, as in life before those of nursery-maids and school-girls, and too often to similar results in dazzling wits and beguiling imaginations. On the other hand, if the amateur critic has any doubts of his own competency in such an office, such as will arise in the best steeled bosoms, and are not unfrequently prompted by memories of former catastrophes, the conscientious individual relies upon professional opinions privately obtained, and, when such is practicable, on published judgments of the press. Objections to each of these alternatives will suggest themselves to every reader. Prime among them is that arising from the duplication, and consequent weakening, of responsibility, when a tribunal abrogates its duty in favor of unseen authorities, who, if competent, ought to be empowered to decide openly.

We believe that a tribunal of the class in question should comprise individuals who have experience in the sort of work to which the desired building is to be devoted, so that in the case of the Law Courts some of the high officials, not necessarily the Judges themselves, who in general know much about the demands, might have a voice in the matter which concerns the performance of their duties. The Commission named to decide in this important matter consists of Mr.

Cowper, the Chancellor of the Exchequer, the Attorney-General, the Lord Chief Justice, and Mr. Stirling. A Committee more worthy of respect than this would be hard to name, if the question were a point of law, the decision of which should be tempered by the influence of the laity; but we fail in estimating the advantages expected from the architectural knowledge of any of these gentlemen.

That the number of competitors for important works should be limited to six is, to our minds, unreasonable; accordingly, we rejoice in its extension: that there should be no limit is probably still more so. The assertion of one of the debaters on the 23rd ult., that because an architect gained a prize nine years ago afforded no reason for including him in the present competition, may be taken as showing rather the spirit in which such subjects are discussed than that in which we should regard them. If we really want to get good men to work for us, to whom should we apply, but to those who, on former occasions, were found worthy? The architects referred to were not mere amateurs, or "dabblers in pretty sketches," as this speaker did not scruple to style them, but men in high professional positions and of extended practice.

When the representative of the Institute of British Architects approached what he called "a very influential quarter," and requested that the area of competition for the Law Courts might be enlarged, the reply was, that it was already too large. In this reply we are disposed to agree if no real competition is to take effect, but merely a foregone conclusion to be blinded by the semblance of a duel. The professional, apart from the personal voices, would probably accept, as the public doubtless would also do, the direct appointment of an architect whose ability in such work as that the Law Courts involves has been proved; but no one believes the committee above named will suffer itself to be swayed by conclusions not derived from the designs submitted to it. It is not to be concealed, however, that the idea of a foregone conclusion, so common in all such cases, is alleged to account for the fact that four of the original competitors have resigned; in truth, no professional body has confidence in a select committee which is not amenable to professional laws, nor competent to decide on such questions by their proper merits.

These questions would be answered and justice done to the architects who are invited to compete, if the House of Commons, or the Government, which is supposed to act in its name, could condescend to decide primarily in what style the proposed buildings shall be designed. That a compromise, such as is indicated by the respective appointments of architects, to design the edifices now on hand, should be practicable is a curious illustration of the state of education in Art in this country. As it now appears, every one feels that no Gothic architect, if true to his principles, has a good chance with regard to the National Gallery, and that no worker in the Neo-Italian fashion has sound hopes of becoming designer of the Law Courts. Why Gothic should be supposed most suitable to the latter—unless the good fortune of Mr. Waterhouse, at Manchester, be a reason for the choice which is evident; in which case it would be a still stronger one for saving further trouble by appointing that gentleman at once—we do not know.

As the House of Commons has decided that six is not a sufficiently large number of architects to compete in respect to the Law Courts, and it is reported that a similar extension of numbers had previously been conceded with regard to the National Gallery—which would seem at any rate to follow the other enlargement—we trust that a revision will take place of the committee appointed to decide on the merits of the designs when they are made, and that its numbers may be so enlarged as to rebut the insinuations of favouritism now so rife, while it secures the confidence of the profession and the public respect in its decisions by including in its ranks a very large proportion of men of Art.

Meanwhile, the recess has interfered with the progress of this question; the additions to the list of architects have not been announced, if made. The last changes involved the refusal of Mr. G. Somers Clarke to compete for the designing of the Law Courts, and the substitution of the name of Mr. J. Gibson (an architect who designed some banking-houses in the City) for that of Mr. Clarke, on the list of gentlemen who will enter the arena. Mr. Gailing has undertaken the battle. It is rumoured that further changes will include the name of Mr. J. P. Seddon as that of a competitor.—*Athenæum*.

A NATIONAL STANDARD OF TIME.

Mr. Baker, inspector of factories, in his report recently issued, suggests the adoption of Greenwich time as the standard throughout the kingdom. There is no doubt that it would be a matter of great public utility if his views were carried out, and that we should have a reliable and common standard whereby our public clocks would be regu-

lated. We quote the concluding part of his report, in which he refers more particularly to this subject:—

"The subject is also a national one—one with which the Factory Act, the factory inspector, and the factory operative have a great deal to do, and are about to have more. I refer to the necessity, all over the kingdom, of universal Greenwich time. The value of such an arrangement, not only to the working classes, but also for all purposes, both public and private, I need scarcely attempt to point out. In England—even in small towns—the difference in clocks is often a source of the utmost annoyance. In large towns in which there are several railway stations it not only often causes a great loss, but a great inconvenience. In Belfast, the passer-by sees public clocks showing English time and Irish time together, the one being twenty-five minutes behind the other; and no doubt it is the case also in other parts of the kingdom. To the working classes everywhere this want of universal time cannot fail to interfere, not only with their hours of labor, but with their domestic comfort. By the Factory Act, all works under the law are to be regulated by a public clock to be approved by an inspector. But since railway station clocks have become so common, public clocks, heretofore so called have been allowed to become extremely irregular; and there is hardly a passenger who would trust for his time to a church clock, for example, or to anything but railway time, for the best of all reasons, that he might lose his journey and his money if he did. But it is doubtful in law whether railway clocks are public clocks, and we have been defeated in an attempt to make them so. A public clock in every town of any size, fitted up by the local authorities, and supplied with regular time by a national telegram, would not only be the focus of time for all the surrounding country, but of all the clocks and watches in the town itself; and perhaps there could be no national expenditure which would be so productive of national economy."

THE O'CONNELL MONUMENT COMMITTEE.

A MEETING of the committee was held on Thursday, at the City Hall. There was a numerous attendance of members. Mr. W. L. HACKETT was called to the chair.

The hon. sec. read the minutes of last meeting, which were confirmed. He then stated that, in accordance with the instructions he received at previous meeting, he summoned the sub-committee for Wednesday last, and after a good deal of consideration they agreed on a report which he would now read, as follows:—

"On Tuesday, at three o'clock, the sub-committee attended in the City Hall, and, on motion, the Very Rev. Dr. Spratt was called to the chair. After mature consideration, the merits of many eminent architects having been taken into consideration, in order to procure an architectural design for the O'Connell National Monument, it was deemed advisable to recommend the following gentlemen as admirably qualified to furnish such design, viz.—J. J. McCarthy, John Sterling Butler, and Charles Geoghegan, Esqrs., of Dublin. It was recommended that the selection of one amongst these gentlemen take place by ballot, each member of the general committee present at Thursday's meeting being entitled to vote. It was also recommended that the architect so selected and receiving the highest number of votes should be called upon to furnish a complete design for the monument, and afterwards to superintend the erection of its architectural portion. For these duties he should be allowed a fair remuneration according to the sum of money required to be expended on such architectural portion, yet not including the sum which must be reserved for procuring sculptural figures. The material for the architectural portion should mainly consist of the best quality of Irish limestone. It was also considered advisable, after the election of the architect by ballot, that a sub-committee should be appointed to confer with him on other business and professional gentlemen."

"MARTIN CREAN,
JOHN O'HANLON, C.C., } Hon. Secs."

Mr. Arkins—How many of the sub-committee attended?

The Rev. Mr. O'Hanlon—Only three members.

Mr. Arkins—Who were they?

The hon. sec.—The Rev. Dr. Spratt, who was in the chair, Mr. Keegan, and myself.

Mr. Arkins observed that the meeting was a very small one.

The hon. sec. said that was the fault of members who did not choose to attend. He could not send out warrants for them.

Mr. J. F. Frazer said the report was a very important document. Of course it would, in the ordinary way, be laid on the table till next meeting.

The Chairman said he did not apprehend that the sub-committee desired to have the report then considered. It ought to be printed and in the hands of all the members before they came to a final decision about it.

Mr. T. H. Tracey said that by suspending the standing orders the report might be considered now.

A member of the trades said he thought there ought to be no more delay. The whole affair ought to be settled at once.

The Chairmau said the invariable custom was to

lay the report on the table for some period before it was considered with a view to adoption or rejection.

Mr. Thomas Ryan had no objection to an adjournment for a week if any good reason was shewn for it. He had heard none, and therefore he would insist upon the report being now considered.

Mr. Keegan, in the course of some observations, said there was reason to complain of the delay, but he thought the adjournment for a week was reasonable.

Mr. Ryan repeated that he saw no reason to forego pressing the consideration of the report at once.

The Chairman thought the report was one likely to bring all the members into harmonious action, and he asked Mr. Ryan, for the sake of perfect unanimity, to give no opposition to the postponement for a week. He was quite prepared to rule the point of order, and hold that the report could not then be considered, but he wished all the members present to agree to the best course.

Mr. Finnegan hoped, for the sake of unanimity, that Mr. Ryan would withdraw his motion.

Mr. Ryan observed that no argument had been brought forward to make him change his opinion.

Mr. Keegan said that nothing would be lost by the postponement of the report, and he hoped, for the sake of unanimity, that Mr. Ryan would not persist with his motion.

Mr. Ryan stated that, though he believed the majority of the meeting were in favour of proceeding with the matter on that occasion, still, as his friends wished him to withdraw the motion, he would take their advice.

After some further observations it was unanimously resolved to let the report lie on the table for a week.

Mr. Keegan proposed a resolution of which he had given notice—namely, that the designers of the three best models for the statue be paid respectively £100, £60, and £40, which were the prizes offered by the committee. He was aware that a difference of opinion existed as to the practicability of carrying the motion into effect, but he trusted a mode would be found for compensating the men who had sent in designs. In Dublin, sculptors had gone to immense expense in preparing their models, and it would be a great hardship on them if they were not recompensed to some extent. In the matter of the Wellington Testimonial they had a precedent for paying prizes for rejected designs. Sums varying from £100 to over £300 were paid to persons whose models were rejected, because it was felt it would be very hard to take their time and labour without remuneration. He thought the models which had been sent in for the O'Connell Monument would be of advantage as giving the committee an idea of what the character of the work ought to be.

Mr. Ryan, in seconding the motion, observed that he saw no reason why even now, at the eleventh hour, they should not give the prizes which they had offered. The duty of the Award Committee was simply to select three out of the best designs, and award them the prizes of £100, £60, and £40. He understood that £100 would not pay half the expense which one gentleman was put to.

Mr. O'Brien said that Judge Berwick, who was one of the Committee of Award, had expressed himself strongly in favour of compensating the artists, who, he thought, were badly treated. If the matter were referred to Judge Berwick and the other members of the committee, means might be found of carrying out the wishes of the majority of this committee.

Mr. Frazer thought that they were all agreed on the main point, but they would be stultifying themselves if they re-opened the question.

Mr. Finnegan suggested that the matter be referred to the sub-committee to report on by next Thursday. In that way they might be able to come to some practical conclusion.

The Chairman observed that the matter was discussed before, but the committee felt themselves coerced by the resolution passed in respect to the conditions on which the prizes were to be awarded. If Mr. Keegan could point out any way of getting over the difficulty he would be happy to support him. It would be a hardship not to remunerate men who had given so much of their time and labour to the preparation of the models.

Mr. Keegan remarked that the sole question they had to deal with was, would they award the prizes to the three best designs?

The Rev. Dr. Spratt said he heard the models would be brought forward again, and the best way would be to appoint a committee to examine them and award the prizes.

Mr. McNamee observed that the general feeling was in favour of giving the prizes which they had advertised to give.

The Rev. Mr. O'Hanlon believed there would be some difficulty in bringing the models together again.

After some further discussion, the resolution was so framed as to authorise the secretary to ask the

members of the Award Committee, to specify, if they could from their data, the first, second, and third designs in the order of merit, the result to be laid before the committee. The resolution was adopted.

CORRESPONDENCE.

NEW PRESBYTERIAN CHURCH, WATERSIDE, DERRY.

TO THE EDITOR OF THE DUBLIN BUILDER.

DEAR SIR,—A letter in reference to the plans furnished for the above edifice appears in your last issue under the signature of Mr. Wm. Hague, jun., architect, which demands a reply from me.

I never claimed the credit of the design for the church, nor did I ever furnish any information to either the *Irish Times* (in which paper Mr. Hague's letter originally appeared), the *DUBLIN BUILDER*, or any of our local journals, in which such claim was advanced. Of the four newspapers in Derry, two, in their report of the opening of the new church on Sunday, March 4th, stated that, "the works had been most creditably carried out by the contractor, Alex. M'Elwee, Esq., under the superintendence of John G. Ferguson, Esq., architect." Even this notice was inserted in their report without my knowledge.

In the spring of 1864 a description of the proposed church appeared in the local prints, for which I did furnish the particulars, in which it was expressly stated that the design was furnished by "Mr. Wm. Hague, jun., architect, of Dublin."

So much for Mr. Hague's charge of usurping the credit of the design. I can assure that gentleman I have not the slightest desire to be considered the architect, nor to assume the responsibility of fathering any merit or demerit (in regard to acoustics, &c.) which the design in question may be supposed to possess; neither am I at all ambitious to be classed as a mere "clerk of works"—I believe my present standing in the architectural profession a sufficient answer to that charge.

The facts in relation to the whole matter are simply these:—The committee advertised for designs for a church and manse, the whole cost of both not to exceed £2,500. They offered a premium of £20 for the best, and £10 for the second best design. They furnished instructions to competitors, in which they expressly stipulated that "the designs approved of were to become the property of the committee, and they reserved to themselves the right of employing such architect as they might select for the carrying out of the work."

Mr. Hague's design was selected on his guarantee that the church (without the manse) could certainly be erected for the sum of £2,000; and the first prize—£20—was paid him.

I am informed that the committee originally intended to employ a clerk of works to superintend the building; but finding (despite the assertion of Mr. Hague to the contrary) that there was no specification, and that a large amount of detail drawings would be required, those furnished with the design being merely for the roof, a flank and apse window, and a bench end, they abandoned the idea and sought the services of an architect.

I was engaged on the 19th March, 1864. When asked my terms for superintendence, &c., I stated "two and a-half per cent. on the outlay,"—the usual superintendence fees—not five per cent., as Mr. Hague, in his letter, with a certain amount of disingenuousness, would lead the initiated to infer. I was then shown Mr. Hague's estimate, £2,000, and though having my own doubts as to its reliability, I agreed to base my commission on it, which thus amounted to £50. Out of this sum, as one interested in the erection, I gave a donation to the building fund of £10. As to whether, in doing this, I acted professionally or not, your readers can form their own conclusions.

It may serve to throw some light on the manner in which prizes are sometimes obtained in competition to state that the tender accepted by the committee for the execution of the works, on the 18th of April following, amounted to £2,750. Unfortunately for me, I had perfected my engagement, and so lost the additional percentage.

Having made this plain statement, I deem reply to the other portions of Mr. Hague's letter needless. I did my best to carry out Mr. Hague's design in its integrity, assisted by a most experienced contractor, and I can assure you, Mr. Editor, we had no easy task.

JOHN G. FERGUSON, Architect.

THE BUILDING TRADE IN IRELAND.

TO THE EDITOR OF THE DUBLIN BUILDER.

SIR,—It was with great pleasure I read the remarks in your last issue on "The Building Trade in Ireland," and venture with you to hope that the "Builders' Association" should show some signs of healthy life.

That such a society exists in name I have heard, but its voice seems to have long been hushed in almost death-like silence. The number of subjects of mutual interest and importance which continually arise might and ought to be made matters of consultation and action; and this, I am assured, could well be done without in any way clashing with personal feeling or interests, but with the best possible results.

Perhaps some of your many subscribers would kindly inform your readers of the nature and objects of the present association, and if it be possible for one of the trade to be admitted within its circle. I am, sir, yours respectfully,

A BUILDER.

THE STREETS OF DUBLIN PAST AND PRESENT.

TO THE EDITOR OF THE DUBLIN BUILDER.

SIR,—Permit me, through the medium of your influential paper, to offer a comment or two on the present state of the streets of this city as compared with their condition in years gone by. Many of your readers will, no doubt, recollect the period at which the sweeping of the streets was accomplished by female labour—men desisting to take part in such seemly degrading work. Brushes for scavenging operations were then unheard of, and the common besom was adopted as the instrument for sweeping. The sweeping, too, was so very seldom performed that no wonder hillocks of mud accumulated so largely as they then existed. Even a few years ago the line of quays continually displayed an "institution" of mud walls, that their subsequent removal drew forth the eulogy of the late Viceroy at one of the public banquets given in the Mansion-house. The carts for the removal of the scavenging deposits were also ludicrous. Two horses yoked "tandem" to convey to a place of deposit a cartful of liquid, and at the destination the vehicle was invariably found empty, the stuff having disappeared through the orifices of the ill-constructed mode of conveyance. No wonder then that attention was aroused to ameliorate the then existing malarrangements for the accomplishment of so very necessary a work. The Corporation themselves carried on the work of Macadamizing and scavenging for years, until experience made manifest the propriety and economy of getting such work performed by contract, with a view of ensuring efficiency, and already we have abundant proof of the wisdom of that course. During the holding of the National Exhibition, strangers who heard unfavourably of the state of the Dublin streets, felt an agreeable disappointment when driving over their surfaces.

The improved system of substituting the rubble bottom formation, now being carried into effect for the last eighteen months, so completely metamorphosed the appearance of the many streets subjected to the process, that even ordinary observers pause and reflect on the work so executed. Expensive as, no doubt, the work must have been, yet the execution of so commendable an operation was so expedient that it is gratifying to see it effected on streets so much in need of reformation. At an age so enlightened as the present, and coeval with the architectural embellishment of the city, it is indeed gratifying that the condition of the roadway of our streets has been so well and so proportionately considered.

The oldest inhabitant as well as the juvenile in his teens admit of the Herculean character of the work effected, and of the ulterior solidity of the foundation laid. The principle of the work may be briefly stated as consisting of an elevation of surface proportionate to one and a-half inches vertical to one yard horizontal. This gives such a gradual incline from centre to channel that lodgments of water are prevented, besides the receptacle provided by the bottoming underneath ensures a filter through which the surplus surface water is readily absorbed.*

To Dublin, the formation of the streets has been a credit; and to the contractor who has carried out the works so energetically, the citizens, and particularly the carmen, have reason to feel grateful.

It is gratifying to see work so purely *Irish* accomplished with so little fuss, obstruction, or disorganization. It is to be hoped that the reconstruction of all the Macadamized streets will be carried into effect with the same amount of energy and practicableness which happily characterises those already completed. I am, sir, &c.,

A CITIZEN.

The Belfast and Ulster Brewing Company have purchased extensive premises in Belfast, formerly occupied by Tucker's starch works, and intend erecting on the site a new brewery. The site has unusual advantages for this purpose on account of the excellent and abundant supply of water on the ground.

* We must still adhere to an opinion before expressed, that the elevation is excessive in some of the larger streets, and the degree of curvature given to Sackville-street an unhappy blunder.

THE MUNSTER ARCADE, PATRICK-STREET, CORK.

We give with this number an illustration of a building recently completed in Cork, for Messrs. Robertson, Ledlie, Ferguson and Company, drapers, who have been for a long time proprietors of similar establishments in Belfast and Waterford, and who have recently extended their operations to Cork. The whole extent of the premises is much greater than what would appear from the drawing, the total depth being 150 feet, by a maximum width of 70 feet, the frontage being but 25 feet. The front, to a depth of about 35 feet, is a new building, the rest of the premises having been altered and fitted up to suit the requirements of the business. The design of the front has been made with a view to future extension, in case of one or more of the adjoining houses being taken by the firm. Mr. William Fogerty, of Dublin, is the architect; and Mr. Daniel O'Callaghan, of Killarney, the contractor. In another column we give a report of some law proceedings arising out of the works, the issue of which, we need hardly say, is highly creditable to the proprietors.

PROPOSED NEW TOWN HALL, BELFAST.

THE Belfast Town Council, having at present in hands a sum of £17,000, have decided on applying it to the erection of a town hall in every way suited to the requirements of their rapidly improving town. A committee having been appointed to consider the matter, the following is their report:—

"Your committee proceeded to the consideration of the plans, and resolved that, having so large a sum at their command, the council ought not to erect offices and committee-rooms as a detached building, but should proceed at once to construct one entire building, which would contain all the accommodation required. The surveyor, under the direction of this committee, has prepared plans, showing the accommodation which your committee are of opinion ought to be provided. The cost of erecting a handsome and commodious town hall will probably be not less than £25,000. To this must be added the cost of a petty sessions court and central police office, with the requisite accommodation, which will involve an additional outlay of probably £5,000. Your committee therefore recommend that designs should be obtained for a building which will cost about that sum. The site which your committee have selected is the ground at the corner of Victoria-street and Chichester-street, now occupied by George's Market, and the ground adjacent. The plans prepared by the surveyor, with the view of affording the council information as to the general nature and arrangement of the necessary apartments, include—a council chamber; a reception room for important occasions, and mayor's rooms; a large hall for elections, public meetings, &c.; a free public library and reading-room; a petty sessions court; a police office, fire brigade station, &c.; committee rooms, offices for the various officers of the council, waiting rooms, record room, &c.

"The best mode of securing competition for these plans has been the subject of much discussion, and your committee think that it is better to submit to the council the several schemes suggested, and leave the decision with them, than to take upon themselves, in a matter of so much difficulty, to make any decided recommendation.

"There are three schemes, any of which may be adopted:—1st. Open competition to all architects who may choose to compete, with prizes of £100, £75, and £50, for the three best designs. 2nd. A competition restricted to six or eight selected architects of eminence, with a payment to each, as a compensation for his trouble in preparing his design. 3rd. A combination of the two, viz.: a payment to a few selected architects for their designs, and an open competition to all architects who may choose to compete; it being understood that the successful competitor shall have the option of superintending the work; the premium in such case to merge in the commission for such superintendence.

"Your committee leave it to the council to decide between these schemes, and have only to remark that they are informed that several of the most eminent architects will decline to send in designs, unless they are invited to do so, and offered a payment which will cover the expense of preparing the necessary drawings. Your committee are of opinion that this matter should be discussed and settled by the council in committee."

The site recommended by the committee—namely, the plot of ground now comprising part of the Park Market and the entire of George's Market contains a space of about two acres.

ARTS OF CONSTRUCTION.*

In considering the building arts, as practised by the inhabitants of this country in past ages, we must necessarily divide the subject according to epochs. The ethnologist would of course begin with his favourite scientific classification of the Stone, the Bronze, and the Iron periods; but this division is, to say the least of it, a very arbitrary, very indefinite, and very doubtful one. It leaves much too wide a scope for imagination, and offers no satisfactory explanation of social development; and the following obvious and natural order of periods, in the present instance, will answer our purpose, namely:—

1. The Pre-Christian period, extending from some indefinite epoch of the pre-historic ages, down to the establishment of Christianity in Ireland in the fifth century; 2. The early Christian period, extending from the last-mentioned epoch to the commencement of the Danish wars, in the beginning of the ninth century; 3. The period of obscurity and barbarism into which this country was plunged by those fierce and long protracted wars, and from which it began to emerge in the reign of Brian, and after the battle of Clontarf, in 1014; 4. The period which followed that just mentioned, and which extends beyond the Anglo-Norman Invasion until the native Irish ceased to act as a distinct people; and, 5. The period which was inaugurated by the aforesaid Anglo-Norman epoch, and descended to modern times, embracing the ages, first, of noble Gothic abbeys, and feudal keeps of Norman barons, and walled towns; and then of the fortified bawns and strong solitary towers of new proprietors, in the Tudor, Stuart, and Williamite times.

In the first of these periods there was no stone and no mortar masonry known in Ireland, nor was there any knowledge of the arch. Of cyclopean masonry—masonry in which huge stones were frequently employed, but never any cement—some stupendous and wonderful specimens belonging to this first period still remain; but there was no cemented work. This we may take as absolutely certain, notwithstanding the notions of some modern antiquaries about the supposed pre-Christian origin of the Round Towers. This Pagan theory of the Round Towers is a pure creation of what we may call the conjectural school of Irish antiquaries. The ancient Irish never dreamt of it. It was suggested at a time when scarcely anything was known of the original native sources of Irish history; and it has seldom been advocated except by those who are either still unacquainted with the sources of our history, or else who are carried away by false ideas of early Irish civilization, and visionary theories of ancient Irish fire worship and Orientalism; for all which there is not the slightest foundation in the actual history of the country. It is right that this should be distinctly understood; without entering into lengthened arguments on the subject, which would be out of place here, it ought to be quite sufficient for any rational person to know, that the character of all the remains of undoubted Pagan buildings in Ireland is utterly inconsistent with the supposition, that the same people who built them also built the Round Towers; and that such knowledge as we actually possess of the manners and customs of the Pagan Irish shows the absurdity of the notion that the Round Towers were built by them. The passages of ancient Irish writings which may be adduced to show that the Round Towers were built by Christians are extremely numerous, while there is not one single iota of evidence in the written monuments of Irish history, either printed or MS., for their Pagan origin—nothing, in fact, but wild, unsupported conjecture and imagination. And such being the case, and all the writings and researches of such distinguished Irish historical scholars as Petrie, O'Donovan, and O'Curry, who have passed away, and of Wilde and Todd, and Graves and Reeves, and Ferguson, &c., tending to overturn the visionary theories of Irish antiquaries, of which the Round Tower phantasy has been the most noted, it is time to abandon this last remnant of a false and exploded system.

What, then, are the remains which we have of the buildings or structures of the ancient Irish belonging to the first, or Pagan, period? They are various and exceedingly numerous. In the first place, there are the *raths*, or earthen forts, with which the whole face of the country is still absolutely dotted. These *raths* were the dwelling places of the Irish, not only indeed, in Pagan times, but much more recently. They were originally rather steep earthworks, surrounded by a ditch, and topped by a strong paling or stockade; sometimes there was a double or treble line of entrenchment, and within the inner fence the family or families of the occupants dwelt in timber or hurdle houses, of which, from the perishable nature of the materials, no traces of course remain. The cattle, too, were driven for safety within the inclosure, when it was known that an enemy was abroad; and it is probable that the position of a great many of the *raths* on a sloping surface was selected for purposes

of drainage, seeing that the cattle were so frequently to be enclosed. It is also worthy of note, that these earthen forts were always polygonal, generally octagonal, and we have never seen one of them actually round; although it would have been much easier to describe the plain circle than the regular polygonal figure adopted.

When the inclosures were constructed of stone they were called *cahirs* or *cashels*. It has been stated by antiquaries that the stone forts were built by the early Irish colonists, called Fírbolgs, and the earthen forts by the subsequent colony of Tuatha de Danaans; but it is probable that each colony built their strongholds of the materials which they found most convenient. In the rich plains of Meath, where there are very few surface stones that could have been employed for the purpose, we find none but earthen forts; and in the Isles of Arran, where there is little indeed besides solid rock, the Fírbolgs necessarily constructed their famous *duns* of stone. These vast Fírbolg *duns* of Arran must have been impregnable in those days, if defended by sufficient garrisons; and their size and number in a place so small and barren show that almost the whole remnant of the race must have been compelled by hard necessity to seek shelter from their pressing foes. It would also appear that the abundant supply of stone induced the occupants of those Arran forts to substitute stone houses in their interior for the habitations of timber and wattles used elsewhere, as we here find numerous remains of the small beehive houses, called *cloghanes*, formed by the overlapping of flat stones, laid horizontally, until they met at top, thus roofing in the house without an arch. Both *cloghanes* and forts are built, of course, without cement; and no one could for a moment imagine that the Round Tower, of which a portion still remains in the largest island, could possibly have been the work of the same masons.

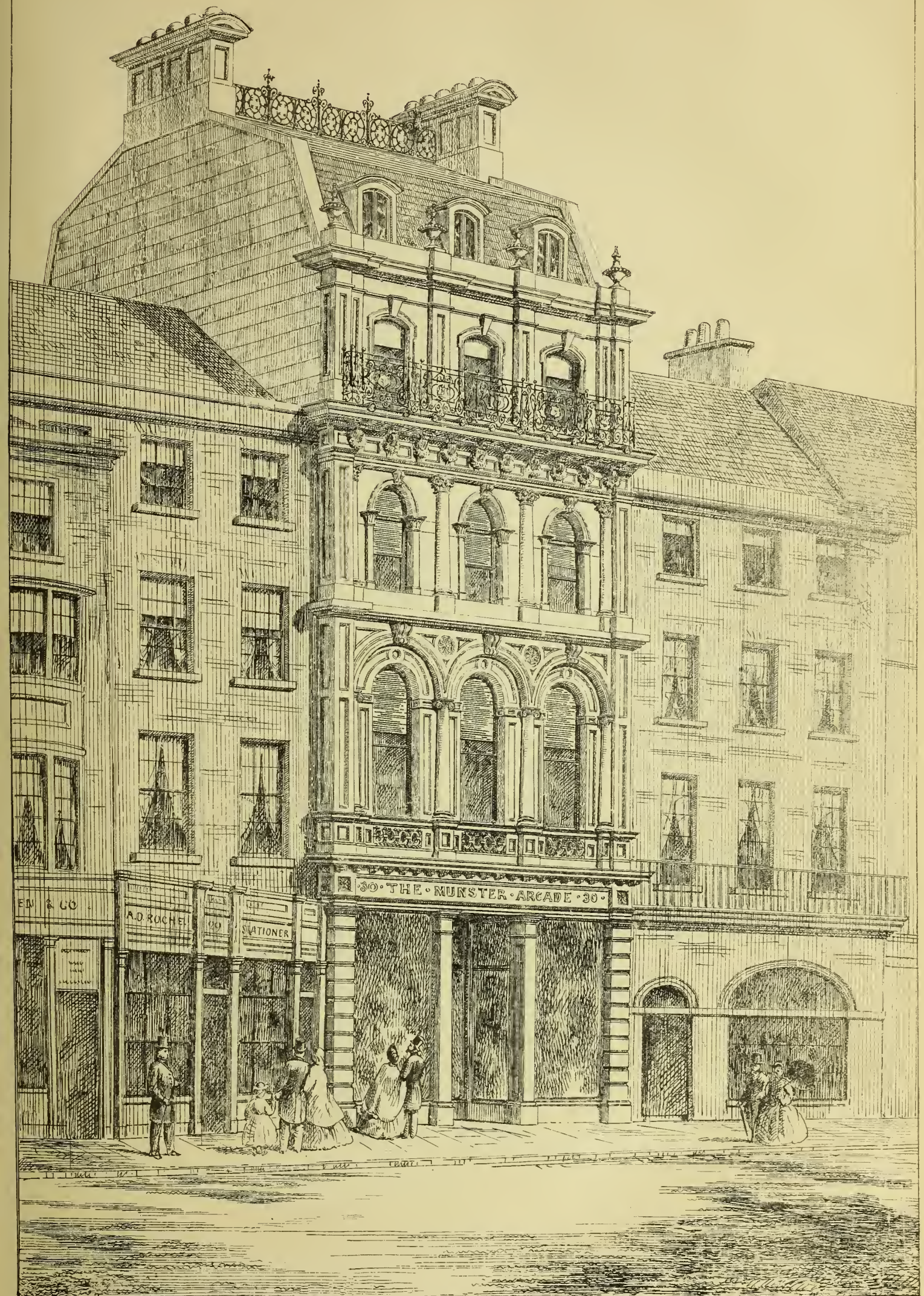
The style of building is the same in the *Duns* of Arran; in Staig Fort, in Kerry; in the Greanach of Aileach, in Donegal; and in general in any of the primitive *cahirs* or *cashels*, wherever they exist in Ireland; nor is there any material difference between these and the similar structures to be found in Wales—such as the Castell-Caeron over Dolbenmaen, in Caernarvonshire.

The same Irish word, *Saor* (pronounced *Seer*), originally signified both a carpenter and a mason; and in an Irish poem, at least eight hundred and fifty years old, we have a list of the ancient builders, who erected the principal strongholds of Pagan times in Ireland: such as—"Casruba, the high-priced *cashel*-builder, who employed quick-axes to smoothen stones;" and "Rígru and Garvon, son of Ugav, the *cashel*-builders of Aileach;" and "Troiglethan, who sculptured images, and was the *rath*-builder of the Hill of Tara; while every one familiar with the native Irish traditions has heard the name of Gubbán-Saor, to whose skill half the ancient castles of Ireland were, without any reference to chronology, supposed to owe their strength.

An Irish antiquary of the seventeenth century, who enjoyed the friendship of Sir James Ware, writes as if he believed that the ancient Pagan Irish understood the use of cement, although, as he confesses, no vestige of stone and mortar work by them remained in his day. But his mode of arguing, as it will be perceived, is very inconclusive. After enumerating several of the ancient *raths* and *cashels* of Ireland, he writes:—"We have evidence of their having been built like the edifices of other kingdoms of the times in which they were built; and why should they not? for there came no colony into Erin but from the Eastern world, as from Spain, &c.; and it would be strange if such a deficiency of intellect should mark the parties who came into Ireland, as that they should not have the sense to form their residences and dwellings after the manner of the countries from which they went forth, or through which they travelled."

[See Introduction to Dudley Mac Firis's great "Book of Genealogies," translated in "O'Curry's Lectures," pp. 222, &c.] It is quite certain that the early colonizers of Ireland, to whom Mac Firis thus alludes, were a portion of that great Celtic wave of population which passed from east to west over Europe, leaving the same earthen mounds and cyclopean stone structures behind as monuments wherever they went; but it is equally certain, that if these ancient colonies visited Assyria, and Egypt, and Greece in their peregrinations, as Mac Firis believed they did, they did not carry with them Assyrian, or Egyptian, or Grecian masonry or architecture into Ireland. The *raths* and *cashels* which they constructed were exceedingly simple in their character, and in very few indeed of the former is there the slightest trace of stonework to be discovered. Caves were very often formed under the *raths*; and Mac Firis states that under the *rath* of Bally O'Dowda, in Tireragh, he himself had seen "nine smooth stone cellars," and that its walls were still of the height of "a good cow keep." Nor were the contents of the ancient Irish dwellings less simple than the buildings themselves; for we find by the Brehon Laws that "the seven valuables of the house

* By M. Haverty, Esq., in *Irish Industrial Magazine*.



W^m Fogarty, Architect.

—THE MUNSTER ARCADE. PATRICK ST. CORK.—

THE LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

of a chieftain were—a caldron, vat, goblet, mug, reins, horse bridle, and pin;” the first-mentioned articles indicating clearly the usages of hospitality, which always formed the predominating institution of the Irish. The same book of Brehon Laws refers to a house with four doors, and a stream through the centre, to be provided for the sick—such, apparently, being the ideas at that time of what an hospital should be.

It is hard to say when the popular notion originated which attributes the ancient raths and mounds to the Danes. It is quite clear that Mac Firhis knew very well they were not Danish, though the idea must have prevailed when he wrote (A.D. 1650); for his contemporary, Lord Castlehaven, speaks of withdrawing his troops, during the civil war of 1645, within one of the “Danish forts,” which were so numerous in the country; and such was the fashion of attributing all our antiquities to a people who had impressed the memory of the nation with such terrible and indelible traditions of themselves, that even Archdeacon Lynch, the author of “Cambrensis Eversus,” supposes the Danes to have been the builders of the Round Towers. Dr. Molyneux, who wrote towards the close of the same century, treats us to a whole book about “the Danish Forts and Mounds;” but we know perfectly well that the Danes of Ireland resided only in the seaport towns and their vicinities, and had no dwellings, and consequently no raths or mounds in the interior of the country.

Besides the earthen and stone forts, which, it must be remembered, were inhabited in the early Christian as well as in the Pagan times, and down to a period which it is impossible now to define, we have several remains of the early Irish lake habitations, called cranogues. These were small stockaded, and generally artificial, islands, in the smaller lakes, and were only accessible by means of boats, ancient specimens of which, hewn out of a single tree, have been found in the vicinity of the cranogues in recent times. Some of these cranogues are known to have been occupied in comparatively modern times; and the strong timber stakes by which they were generally surrounded are, in a few instances, still found singularly fresh, and with indications of having been connected by a strong framework.]

INSTITUTION OF CIVIL ENGINEERS.

A MEETING of this body was held on Wednesday evening last, in the New Building, Trinity College. Professor Downing, V.P., in the chair.

A paper by Edward Townsend, M.A., Professor of Civil Engineering, Queen's College, Galway, entitled “A New Method of Finding the Angles between the Face Joint and Coursing Spirals on the Soffit in a Skew Arch,” was read, and a lengthened discussion followed. Also a paper by A. M'Donnell, Member, “Description of an Axle Box fitted up for using Oil, and Outside Coupling Rod of a Locomotive with Solid Bearing.” The reading of this paper also led to an animated discussion amongst the members.

EXHIBITION OF MÆDIEVAL ANTIQUITIES.

THE great success which attended the Loan Exhibition of Mediæval Art at South Kensington, in 1864, and which led to the formation of a similar collection at Paris in the autumn of last year, of which I sent you a short notice, has also induced the authorities of Italy to attempt the permanent establishment of a Mediæval Art Museum (to which the various members of the nobility who possess objects of that character have most liberally contributed, by way of loan). Those who know the magnificent national collections contained in the Uffizi Galleries and in the Pitti Palace, will at once recognize the want of such an establishment, especially when it is recollected that the northern part of Italy proper has possessed several distinct and special manufactories of objects of Art very different from those of the rest of the world. I allude, of course, not only to the Della Robbia ware, so extensively employed here, in situations where one would scarcely expect to find crockery-ware used (or, indeed, capable of being worked in such a manner as to allow of its being so used), but also to the extensive use of the fine-coloured Florentine marbles, as well as party-coloured wood, in mosaic work (in the place of coloured glass cubes used in its stead in other parts of Italy), to say nothing of armour and arms, with which the Paris Exhibition was enriched to so large an extent from the collection of the Emperor himself, but of which the South Kensington Exhibition furnished no examples. Hence there was an evident want of a museum of such objects as we now especially regard as of mediæval archæological interest, and which have not found a place in the long-established museums and galleries of northern Italy, and especially of Florence.

The old Palazzo del Bargello, or, as it is sometimes called, the Palazzo Pretorio, at the corner of the Via Ghibellina, in Florence, has been selected

as well fitted for such an exhibition. The present building (which replaced one erected about A.D. 1250) dates back to the middle of the fourteenth century, and, after serving various municipal purposes, has at last had its rooms cleared out, cleaned and decorated, is now applied to the purpose of a Museum of Art-manufactures, as distinct from the ordinary contents of Italian museums—paintings and sculptures. Unfortunately, the grand collection of frescoes on the walls, executed by Giotto, and on which the contemporary portrait of Dante (published by the Arundel Society) was executed, have been irretrievably ruined by repainting and retouching, but, although this is greatly to be regretted, the present destination of the building will, in a great measure, redeem the mistake. Unfortunately, no attempt has been made to publish a catalogue, or even a detailed notice of the various objects now assembled in this noble building, or even to afford an idea of the many noblemen who have contributed to it from the stores of their palaces.

The rooms on the ground floor are not opened to the public, nor are they used for the Exhibition; but the great central inner court contains a collection of early stone sculptures of great interest, exclusive of the many sculptured coats-of-arms of the chief magistrates with which the walls of this court are covered. Here is a grand seated Madonna and Child, on stone, of the thirteenth century, more than double the life-size and very excellent in its general treatment. Also two small fragments of sculpture, with inscriptions as sharp as when executed, “Anno MCLXXVI indictione x”; one representing Christ calling St. Peter and his companions from the boat to become fishers of men; and the other a monk crouching to his superior with clasped hands and cowed head. The proportions are very short, the boat of St. Peter as small as a Welsh coracle, with the paddle passing through the side. Here, too, is a Silenus riding on a tortoise of large size, gross in general design, but with a very expressive head; and here is one of the grandest of the Della Robbia altar-pieces of large size, the centre part containing a representation of the birth of Christ; the infant Saviour lying on the ground in the centre of the lower part, with the Virgin and St. Joseph on either side in the act of adoring the Infant; an infant St. John and a female figure (attendant on the Virgin) forming the hind part of the composition. The upper part consists of a distant landscape, with two shepherds playing on various instruments, whilst another gazes with wonder on the star; many small details, such as trees, dogs, birds, &c., give great animation to the group, which is brilliantly coloured, whilst the angels at the sides of the picture are splendidly treated. It bears several inscriptions, one of which states it to be the work of “Andrea de Robbia, MDXXI.”

The rooms on the first and second floors are devoted to the general collection, and here the want of a catalogue must be my excuse for not giving such a detailed account as I should liked to have done. The collection of armour occupies two very large rooms. It is beautifully arranged, and comprises many pieces of great rarity, and others of historical interest, one of the most elaborate being formed of steel rings, the head-piece furnished with a nasal; it is so delicate in its workmanship as to have been scarcely fit for defence, and must, I suppose, have belonged to one of the exquisites of the period. Much of the armour is beautifully damascened, the whole forming a great contrast to our national collection of armour at the Tower. Here, too, are several saddles of curious workmanship, being formed entirely of plates of ivory, elaborately carved with historical scenes, of which I had previously seen no examples.

The collections of majolica, Della Robbia ware and Venetian glass are extremely beautiful; the majolica having been inherited by the Medici family from the Dukes of Urbino, manufactured at Castel Durante and Urbino at the beginning of the sixteenth century by the best artists. Of these pieces, that which represents Raphael's Incendio del Borgo, by Orazio Fontana, and another with the Martyrdom of St. Cecilia, by Nicola d'Urbino, are the most important. These, as well as many other parts of the collection, have been brought from the Uffizi, especially from the room marked 206 in Murray's handbook (adjoining the Hall of the Hermaphrodite), which is now dismantled.

The collection of furniture occupies a large room, and, from its gorgeous character, proves that the Italian nobility spared no expense in the decoration, even in the more private portions, of their palaces, a large bed being certainly one of the most splendid specimens in the apartment.

The collection of jewels is quite dazzling. One small glass case of jewelry, consisting of brooches, earrings, rings, and small stud-like ornaments, sewn upon velvet, especially attracts attention. Some very beautiful silver filigree work, in scent-bottles, jugs, &c., also deserve mention.

There are but few mediæval ivories in the collection; but one of small size, representing the Saviour standing beneath a rounded arch, with the left hand raised and *fully opened*, and with the evangelic symbols at the angles, an eagle with outspread wings being represented on the crown of the arch, deserves mention from its unique treatment. On the other hand, however, the collection of modern ivory work (crucifixes, statuettes, cups, &c.) is very fine, and occupies two large cases. Another case is filled with objects made of tortoise-shell work inlaid with amber; one of these, in the shape of a round church or tabernacle, the centre part rising up, and surmounted by a tall cross, is exceedingly elaborate.

Here are also a number of illuminated manuscripts and service-books of Italian origin, amongst which one belonging to Sta. Maria Novella is certainly one of the most beautifully executed volumes I have ever seen, rivaling the Douce Pliny or the Grenville volume. The text is of gold, on a beautiful purple ground, the margins illuminated in a most brilliant manner, and with a number of full-page illuminations.

Of objects for religious use, I may particularly mention two extremely rich episcopal staves, reminding one of those at Corpus Christi and New Colleges, at Oxford. Processional crosses, elaborately embroidered copes, several fine reliquaries and enamelled plaques, with an extensive series of mediæval seals, medals, and coins complete the collection, which, when more systematically arranged, will be a not unworthy companion to the Uffizi or Pitti Galleries.

I. O. W. in *Athenæum*.

THE ROYAL IRISH ACADEMY.

ON Monday evening last a general meeting of the Academy was held in the Library of their house, 19 Dawson-street; the newly-elected President, Lord Talbot de Malahide, occupied the chair. There was a numerous attendance of members.

The minutes of last meeting were read by the secretary, and signed.

The President then delivered his inaugural address,* which was listened to with marked attention, and at its conclusion the Very Rev. Dean Graves (ex-president) proposed that the president do permit it to be printed by the Academy. The promise which had been made by the Lord Chancellor and the Provost of Trinity College at the last meeting of the Academy had, he thought, been fulfilled. In proposing the nomination of Lord Talbot de Malahide as president of the Academy they stated that they felt assured he would evince his fitness for that position. The wide range of topics embodied in his address showed that he was a man of extensive reading, and cultivated mind, and that his researches in various departments of science had been such as to enable him to sympathise with the labours of the most active members. No part of his address seemed to meet with a more cordial response than that in which he maintained the keeping close the ties which bound together the different departments of the Academy.

The Lord Chancellor said he had the greatest pleasure in seconding the proposition of his respected friend, Dean Graves. He ventured to say that the reasons he had given when asking them to place his friend Lord Talbot de Malahide in their chair had fallen far short of the impressions which his address of that evening had produced. The proof that it contained of his acquirements showed that the motion which he had made was justified by the event, and therefore it was with the greatest pleasure that he seconded the motion that the luminous, clear, distinct, and appreciative address of the President be printed and circulated amongst the members.

The President, in acceding to the wish of the Academy to have the paper printed, observed that he felt very much flattered by the kind manner in which his address had been noticed.

A paper by John Casey, Esq., on “The Equations of Circles and Spheres touching other Circles and Spheres,” was laid on the table by Rev. Dr. Reeves.

A paper by F. J. Foote, Esq., on “Some Rathis in the neighbourhood of Boyle,” was also laid on the table.

Sir William R. Wilde said he would postpone his paper on “The Silver Articles in the Museum.”

Mr. G. V. Du Noyer presented to the Academy 100 drawings of architectural antiquities from original sketches made by himself; also a descriptive catalogue of the drawings, which he regretted he could not read, as he was labouring under a severe cold.

The following gentlemen having been balloted for, were elected members of the Academy:—Archibald Collum, Esq., jun.; Lieut.-Col. Edward Cooper, M.P.; Markree Castle, Collooney; Rev. James Gaffney; Edward Hudson Kinahan, Esq.; W. H. S. Westropp, Esq.; Alex. G. Moore, F.L.S.; John A. Byrne, M.D.; J. K. Forrest, Esq., F.R.C.S.I.

* The address in *extenso* will be found on another page.

ON THE CHURCH OF ST. STEPHEN, OR
THE "ABBAYE AUX HOMMES," AT
CAEN.*

ON a former occasion I described the Romanesque portions of this celebrated church, consisting of the nave and transepts and the west front. I was then requested by your secretaries to complete the history of the church by adding the Gothic portions which comprise the choir with the apse, and the spires. I thought it necessary to visit the church again, for the tenth time at least; but I have never been able to satisfy myself respecting the history of this part of the building, and am still in some doubt as to what period to assign this work. In the entire absence of documentary evidence, and in the face of a tradition which is manifestly erroneous, it is only by comparing it with several other buildings of the same province, corresponding with it in style, and endeavouring to trace the progress of one by the help of another, that we can hope to arrive at any satisfactory conclusion. Notwithstanding the number of works that have been published on the architecture of Normandy, very little has really been done to elucidate the history of these interesting buildings, for which, with a few exceptions, the dates are still entirely wanting. There is, however, one exception, which is important for our present purpose. The cathedral of Lisieux may fairly be said to be of ascertained dates; the names of the bishops under whom the different parts were built are recorded in the "Gallia Christiana," and these dates have been well applied by the local antiquaries. It is much to be wished that the keepers of the archives (*Les Archevistes*) in other cities of France would bestow the same attention on the history of their buildings as has been given to Lisieux by the late M. Farolet. From his researches it is established that the former church was destroyed by fire in 1136, and the present one was built between 1141 and 1182 under Bishop Arnault, and the choir rebuilt or enlarged between 1226 and 1253, after another fire, under Bishop William du Pont-de-l'Arche, who founded the three chapels at the east end round the apse, the central one of which was rebuilt and enlarged for the Lady Chapel in the fourteenth century.

The present nave of St. Peter's at Lisieux, formerly the cathedral, may therefore fairly be attributed to the latter part of the episcopate of Bishop Arnault, or from 1160 to 1182, and as this church is one of the best examples in Normandy, the latest phase of the transition from the Romanesque to the Gothic style, this date is very important for comparison with other buildings like St. Stephen's, at Caen. The work corresponds so closely with that of Sens and of Canterbury, both of which were building at the same time, that there is really no difference of style; we cannot say that one is at all in advance of the other. This enables us to establish a starting point for our researches into the comparative progress of the early Gothic style in the three countries, and it is a very interesting investigation to endeavour to discover which had the priority in each successive change of style, and which borrowed ideas from the other. It is perfectly clear to those who have investigated the matter, that every nation developed gradually a style of its own, just as distinct, and in the same natural manner as its language, and therefore the architecture of each nation was as distinctly national as its language. But just as each borrowed words and ideas from its neighbours, so did it borrow architectural details. All started from the same point, the Roman, and each continued to imitate the Roman buildings, without much essential variation, though not without very marked provincial characteristics down to about the year 1180, or at least until the middle of the twelfth century. Whether the change of style began at an earlier period in one country than another is a much disputed point, but it is clear that these three buildings are so much on a par, and so nearly of the same date, that one may safely say that from this point the three nations started fair in the same race. In England, the progress during the last twenty years of the twelfth century was wonderfully rapid, from the corona and the transepts of Canterbury in 1184 to the choir of Lincoln, the presbytery of Rochester, and the galilee of Ely, all before 1200; the progress, although not unnatural nor improbable, was such as to show the wonderful energy and activity of the English people at that period. It is very questionable whether the progress was equally rapid either in France or in Normandy, when the facts are closely investigated,

although it has long been usual to consider that England was always behind the continent, and borrowed all its ideas from thence. My present object is to explain and illustrate the Gothic portion of St. Stephen's, at Caen; but this can hardly be made intelligible without examining the early Gothic of Caen and its neighbourhood, which may fairly be called the early Gothic of Normandy, for this is the district in which it is found most pure, and less mixed with that of other countries. On the banks of the Seine, as at Rouen, it is mixed with the Parisian style, or more correctly the style of the *Isle de France*, of which Paris was the capital. In the southern parts of Normandy it is mixed with the styles of Anjou and Maine, and in the sea ports with the English, as at Eux, but in Calvados we have the early Gothic of Normandy in all its purity, and a very beautiful style it is, equally distinct from the English and the French; and I do not think that an examination of the dates, as far as they can be ascertained, or the progress of the styles, will bear out the assumption that the early English Gothic was borrowed from Normandy. The style of the choir and apse of St. Stephen's at Caen, evidently comes between the nave and the apse of Lisieux, the latter being pure Norman Gothic, and in the opinion of the best Norman antiquaries the date cannot be put before 1200, and between that and 1220 is the probable date. The only vestige of the Romanesque style is the use of the zigzag ornament in the mouldings of the arches of the choir, and perhaps the very singular use of plain segment arches to carry the vault of the triforium gallery, partly enriched by the ornamental heads of the arches of the arcade in front of them. This is a clumsy piece of construction, which would hardly have been used after the Gothic style was established.

It is time to enter more into detail in the description of this interesting edifice. Of the original choir of the eleventh century nothing remains visible, but by a very careful examination in the roofs of the aisles above the vaults of the triforium gallery, in which I was accompanied by M. Bouet and M. Cordier, we found just sufficient vestiges remaining against the wall of the central tower and transept to show that the plan of the original choir was the same as that of the nave, having a vaulted triforium gallery of the same style as the present one, for a small portion of the early vault still remains. This choir was no doubt short, with an apse according to the custom of that period, and it was entirely removed to make room for the present choir. Along with the choir, the apse with the apsidal chapels, and the aisles, the chapels on the eastern side of the transepts were also rebuilt, and the one belonging to the south transept, now used as the sacristy, remains in good preservation, and in a more genuine state than the rest of the church, having escaped the present mis-called restoration, which here means *scraping*, to which all the rest has been subjected. While we cannot help lamenting this vile practice of scraping the surface of the old masonry, which entirely destroys its original character and the tool-marks of the early masons, which are often very important for tracing the history of the buildings, we must at the same time give the Normans full credit for the great care and skill with which all the necessary repairs have been effected. It is difficult to believe at first sight that a large part of this church, and especially of the choir, is really the work of the seventeenth century, and yet it is perfectly certain that such is the case. The church narrowly escaped being entirely destroyed by the Protestants under Coligny, and a considerable part of it was actually pulled down by them, and restored at the expense of the abbey about sixty years afterwards. The best proof of this is that the builders' accounts are preserved among the archives of the town, and the orders given by the monks that the original work should be copied as faithfully as possible. These orders were obeyed very conscientiously to the best of the ability of the workmen, but a careful examination, with the assistance of the keen eyes of my friend M. Bouet, has enabled me to detect all these real restorations, and the changes that have subsequently been made in some parts.

The engravings published by Pugin and Cotman, and others, and the excellent drawings of M. Bouet, several of which have been engraved as illustrations to this paper, will give you a better idea of the plan and arrangement, and the details of this beautiful choir than any verbal description can give. But the manner of working the surface of the stone, and the width of the joints between the stones are seldom attended to in any drawing or engraving; and as it was shown in describing the nave of this church, that these minute points are sometimes very important in tracing out the history of the fabric, they must not be overlooked in the choir, where they are of nearly equal importance in distinguishing the work of the thirteenth century from that of the

seventeenth. On the surface of the stones of the twelfth century the marks of the hatchet are in diagonal lines; in those of the thirteenth the lines are nearly horizontal, and worked with much care: in those of the seventeenth the surface has been smoothed with the scraper, which has been mercilessly applied in modern times on all the parts that are exposed to view. The joints of mortar in the thirteenth century are of about the same width as those in the twelfth, but the edges have been grooved with an iron tool, so that they are slightly hollow instead of projecting. In the modern work no care is bestowed on this matter, so that the manner in which the joints are finished is a safe guide to the dates of the different parts of the work, which are sometimes mixed up together in a very intricate manner. The vaults of the choir and of the triforium gallery were almost entirely rebuilt, and the bosses at the junction of the ribs of the apses bear the arms of Charles D'O., who was abbot from 1582 to 1620 and of other dignitaries of the abbey at the same period. A careful examination shows that the mouldings of the ribs are shallow and more slender than the original. The north side of the clerestory was entirely rebuilt. The roofs of the aisles of the choir above the vaults have been three times altered. They were first covered with lead, which was stolen by Coligny, then with wooden shingles, and afterwards with tiles. These changes caused also a difference of level, and caused the alteration of the windows of the triforium gallery, which were made circular to suit the higher roof. Those at the extreme east end were, however, always circular, and one of them has preserved part of the original tracery. The external arrangement by which the parapet and the allure, or rather the gutter, of the semi-circular apse, is carried on arches across the intervals between the apsidal chapels, should be noticed as one of singular elegance, and having a most picturesque effect.

I have mentioned that there is an erroneous tradition respecting the date of the choir, but I think that M. Bouet has hit upon the true explanation of this tradition. The confusion arises from the double meaning of the word choir, which properly signifies that part of the church in which the chorus are accustomed to assemble to chant the service; this being usually the eastern limb of the church, the name has come to be applied to that portion of the edifice, but the two are not necessarily identical. In many churches in Italy, and especially in Rome, the choir or place for the chorus is moveable, and is changed at different seasons of the year. In England and in France it frequently extends across the transepts, and includes one or more bays of the nave; this was the usual arrangement in cathedrals, and it has been applied to many parish churches with great advantage. In St. Stephen's, at Caen, during the great repairs of the eastern part of the church in the seventeenth century, a chapel on the north side of the nave was fitted up for the use of the chorus, and continued to be used as a choir for above a century: hence the monks became accustomed to call this chapel the choir. This chapel was built by the Abbot Halbout in the fourteenth century, and is still known by the name of the *Chapelle Halbout*; it was therefore quite natural for the monks to say that their choir was built by the Abbot Halbout, for this was true in their sense of the word choir, but this tradition was afterwards misapplied to the eastern limb of the church. This chapel of Halbout is not without interest for us, though it has been much altered and spoiled. The vault is modern, and of plaster only, but in fair imitation of the old one. The side windows are flamboyant work of the sixteenth century, but the east window is either original or a careful copy, and is of the form usual in the fourteenth century in this part of France; and this is important for our purpose in studying the comparative progress of the art. The tracery consists entirely of foliated niches, almost identical in pattern with those of the Chapter-house of Westminster, which Mr. Scott has proved by documents to be of the middle of the thirteenth century. The same form occurs in the Chapter-house of Salisbury, a very few years after that of Westminster, and it is common in England in work of about 1260. It is used also in the Sainte Chapelle, in Paris, at the same time as at Westminster, but that is considered by all French antiquaries as an exceptional building, very much in advance of other buildings of the same period; and this form of tracery is considered as characteristic of the fourteenth century over the greater part of the north of France, while in England it belongs usually to the latter half of the thirteenth.

Perhaps the most striking feature of this remarkable church consists of the spires, especially those of the west front, which are amongst the most elegant of the many very elegant spires for which the Early Gothic of Normandy is celebrated. There are on St. Stephen's church altogether eight spires, including those upon turrets as well as those on the

* Read at the Ordinary General Meeting of the Royal Institute of British Architects, February 26th, 1866, by J. H. Parker, F.S.A., Hon. Member. Published by permission.

† Probably that variety of the Roman style which is called Byzantine, and especially that branch of it which had been worked out in Syria, and drawings of which were brought home by the Crusaders, had considerable influence on the ornamentation of the Romanesque styles of France, Normandy and England. The recent valuable work of the Count de Vogüé throws much new light on this subject.

larger towers, and this beautiful group of spires gives an admirable effect to the church at a distance. They are not all of the same period, nor of the same importance: the earliest is on a stair turret of the north transept; it is octagonal, and belongs to the later Romanesque work, or soon after the middle of the twelfth century. The next are two pairs belonging to the Early Gothic work of the choir, and show this to be a little earlier than the western spires, as their character places them clearly between the early one and those at the west end. They are square rather tall pyramids, with mouldings on the angles, and a finial, and are amongst the earliest Gothic spires, rather solid and heavy when compared with the later examples, but much lighter and more elegant than the earlier Romanesque spires which abound in this neighbourhood. Those at the west end are, however, very superior in lightness and elegance, with pinnacles of open work at the angles and in the centre of each face. These spires are themselves light, slender, octagonal structures, rising from the tall square towers of the earlier period, and are quite models of Early Gothic spires. The northern one is rather earlier than the southern, and the pinnacles not quite so light and open, but neither are they so *bizarre*, for notwithstanding the light elegant effect, it must be acknowledged that the triangular pinnacles of the southern spires are a singular caprice, and not a good construction. They have had to be renewed several times, the last time within the last twenty years; but the original design has been faithfully copied, though the details cannot be depended on. These are amongst the earliest Gothic spires, and probably date about 1230. Caen has two other spires; the celebrated one on St. Peter's church, a very elegant and beautiful example of the beginning of the fourteenth century, octagonal with openings pierced in the flat sides, and mouldings on the angles and inner pinnacles. The remaining one (St. Saviour's) is later, and not so good. It should be observed that in nearly all the spires in this district the surface of the stone is cut to imitate wooden shingles or tiles, a clear proof that there were earlier spires of wood from which these were copied; indeed there is little doubt that all the Norman towers either had or were intended to have spires of some kind. The frequent burning of the wooden spires, and the natural decay of the material in such an exposed situation has caused them to disappear, and in England the towers have gradually been left with their square tops calling in vain for spires. In this part of Normandy, where the building stone is so abundant, and so easily worked, stone spires were very generally introduced in place of the wooden ones.

I am very much inclined to believe that Europe is indebted to Caen and its neighbourhood for that very interesting feature in Mediæval architecture—the Gothic spire of stone. I know of no other district in which we can trace such a series of steps leading up by a natural succession and progress to this object, as the pyramids which form a common termination of the church towers of this neighbourhood. Beginning with the very remarkable and curious low pyramid of Than, which may fairly be assigned to the end of the eleventh century, we can here readily trace the successive changes at intervals not exceeding ten years from each other, in a series gradually becoming more lofty, better executed, and evidently later in character, until we come first to the square spire and then by a natural and easy transition to the octagonal spire with its group of pinnacles and spire lights (*lucarnes*) at the base. To begin then with Than: in this remarkable structure the surface is not made even in one gradual slope as was afterwards the case, but the pyramid is built in a succession of steps with the angles chamfered off, and within the stones are not cut, but left rough and overhanging one another, like the Irish cairns and beehive houses, and at the base of the pyramid a large piece of timber was introduced, like the wall plate on the top of a wall, as if to bind the tower together, and make a secure base to construct the pyramid upon. This timber has now entirely decayed, and has left only the opening in which it was placed, which must tend materially to weaken the structure; the upper part of the pyramid also has long been destroyed, and leaves an open hole to admit the rain, as into a well. I am rather surprised that the excellent French Society for the conservation of Mediæval Buildings (*Monuments Historiques*) (of which I have the honor of being a member,) has not given its attention to this curious structure. The next pyramid in date is probably that of Comornes, near Bayeux, which is in a tall tower possessing some curious features of quite the beginning of the twelfth century or the end of the eleventh. The pyramid itself is low and very early looking. It is built of ashlar, the upper part has been repaired, and has unfortunately had a window and a bell put on the top. The next which occurs to me is Basly, near Caen, which belongs to near the middle of the

twelfth century, and Roshel which follows very soon after. These are simple pyramids without any corner pinnacles; the latter has a round moulding on the angles, a finial, and spire-light.

Huppeau, near Bayeux, may come next. It is considerably taller than those that have gone before, but appears to be nearly, if not quite as early. It has a large roll moulding on the angles, and the surface is cut in imitation of shingles. At each of the four corners is a sort of rude large crocket, the lower edges of the pyramid resting upon a corbel table, as is usually the case, and these corbels are very rudely carved, but the cutting is deep. Vaucelles, in the suburbs of Caen, has been repaired, but copied with tolerable fidelity, and belongs to this period. St. Loup, at Bayeux, which has been engraved by Pugin, is another very fine example of this class. St. Contest, near Caen has also had the pyramid rebuilt in modern times, but faithfully copied, and may be classed here. Bony is a fine example of transitional character, which may be called either a very tall pyramid or a square spire; it has no corner pinnacles, but has *lucarnes* in the centre of each face.

Douvres may be taken next: it is octagonal, but very early, quite of transitional character, and stands on a tower of the same period. The small square spires at the east end of St. Stephen's, at Caen, have been already mentioned, and should perhaps come before Douvres. Ducy is a very elegant lofty octagonal spire with square pinnacles, and is a little earlier than the western spires of St. Stephen's, Caen.

The spires of the Cathedral of Bayeux are so much of the same character as those of St. Stephen's, Caen, that they were probably building at the same time. They are not equally elegant, and the corner pinnacles are not so open, which gives them rather an earlier appearance. Secqueville has a fine spire of nearly the same character, possibly a little earlier, having no corner pinnacles, but it has *lucarnes*, and those correspond closely with the others.

These are all the examples which occur to me as leading up to, or contemporaneous with, those of St. Stephen's, at Caen, which it is my object to illustrate by this brief comparison. A few words should perhaps now be added on the later spires of the same district.

Those of Bretteville, Bernières, and Langrune follow in this order, and bring us to about the middle of the thirteenth century. They are all admirable examples of elegant design and wonderfully light construction, and each is of itself a study for a young architect. After these come the unfinished spires of Norrey and Aubrieu, which bring us to the end of the century. Norrey is one of the most beautiful of this district of beautiful churches; it is often said to be copied from St. Stephen's, Caen, but is almost an exact copy of the Cathedral of Bayeux* on a small scale, quite a little model of a cathedral. It was intended to be made far more rich on the exterior, but was never completed. The small portions that are finished are exquisite pieces of Gothic detail and carving, but it is of considerably later date, near the end of the century. The spire was never completed, but it is carried above the top of the pinnacles, which are finished, and show what it was intended to be. At the east end a whimsical fancy has been introduced: the two apsidal chapels have each a half spire carried up for a roof, so that they look as if the two had been split asunder, and ought to be joined together again. The effect is very bad, and even ludicrous, and this seems to show that when the architect deviated from his model he was not to be trusted, although the workmen possessed wonderful skill.

This brings us to the spires of the fourteenth century, of which St. Peter's, at Caen, is the favourite type, and which is commonly quoted as the perfection of a spire, although some prefer the earlier type, of which St. Stephen's affords the most perfect example. The spire of St. Saviour's, at Caen, would rank very high if it were not so near to St. Peter's, to which it is not quite equal.

In a very ingenious and clever essay by M. Cordier, of Caen, published in the "Bulletin Monumental" for 1862 he endeavours to prove that the mode of construction, commonly used in Normandy and in England in all large Gothic buildings, with a double wall, is of Norman origin, and almost peculiar to the Anglo-Norman buildings. It is certainly used in Gothic buildings in other parts of France, but whether it was used at so early a period in other provinces is a question deserving of investigation. By a double wall is meant that mode of construction which consists of an inner and outer casing of ashlar, with the interval filled in with grouting, which afterwards becomes a concrete

mass, and with passages left at intervals, which do not affect the strength of the wall. The inner casing carries the vaulting, and the outer casing the outer roof. Openings are left in both the outer and inner casing for the doors and windows, and the triforium arcade, but with this difference—that in the clerestory the opening of the inner casing is larger than in the outer one. In the triforium arcade this is reversed; the inner face of the wall being here the one most exposed to view. The larger opening is made at this part in the gallery, and is covered by one wide arch instead of being divided as in front. These openings are usually made to correspond so well, that the fact of their having to be made through what may be called in this sense two distinct walls escapes observation; but it is only natural that in the earliest Gothic buildings, before the masons had become accustomed to the new style, these openings should not exactly correspond, that the effect from different points of view had not been sufficiently studied, and some awkward arrangement should be produced. This is precisely what has occurred in the choir of St. Stephen's, at Caen. In the clerestory the outer openings are double, forming two lancet windows coupled together. The inner opening is wider than the two outer ones combined, and has a trefoil arch, but the head of this arch is not high enough to clear the heads of the outer windows, and cuts across them in an unusual manner. Shafts were also carried down from the front of the trifolium inner arch, across the lights of the outer windows, an arrangement which never occurs in later work after the plan was understood. In the triforium gallery this defect is still more strikingly displayed. The large arch in the outer wall of the choir is segmental, and so low that it comes down quite to the springing of the pointed arch, and leaves a blank wall behind the ornamental work in the head of the triforium arcade, and is distinctly seen from the choir, forming quite a blot in this beautiful design. This low arch carries the vault of the triforium gallery, or the *tribune* as the French call it; and although a large part of that vault has been rebuilt in the seventeenth century, I have satisfied myself after long and careful examination that it has been faithfully copied, and that part of it is original. These arches, especially the springing stones of them, form part of the original construction, and they carry the outer wall of the clerestory. The courses of stone and the joints of the masonry in this case prove them to belong to the original structure, although I was very unwilling to believe it, and was long before I became convinced of it. But M. Bouet showed me that the same arguments by which I had reminded him of the changes that had been made in the construction of the nave were equally applicable to the choir; and the courses of stone, and the distinct character of the joints of the masonry of different periods are arguments that there is no evading when carefully examined on the spot.

The mode of construction with double walls filled in with grouting is a matter of some interest to trace to its source. The Romans did not employ it. Their walls, it is true, are often faced with brick or with ashlar in small cubes, sometimes on the exterior only, more frequently both inside and outside, but the strength of the walls does not in the least depend on the facing, and the interior is more commonly plastered only for the purpose of receiving mosaics or frescoes, or is ornamented with slabs of marble, or with stucco, or with bronze. In Rome itself, and in a great part of Italy, the walls are almost entirely constructed of rubble or concrete, either of broken brick or roughstone, merely faced with cut stone or marble. In England and in Gaul the Roman walls are commonly built of rough stone with grouting, but banded together with layers of tiles at short intervals, and it is evident that the Romans depended more on their tiles or bricks for the strength of the wall than on the stone, and that the facing had nothing to do with the strength of the wall. In Mediæval walls this is reversed; the strength of the wall depends upon the ashlar, and although the grouting often became a concrete mass, this was usually accidental. Double walls with passages in them could not stand if the ashlar was removed. In some cases, indeed, where the walls were very thick, and had a passage in them, and the line, being burnt on the spot, happened to be very good, the concrete mass remained as a rock long after the ashlar has been removed, as at Reading Abbey, but this was never the intention of the builders. The double walls of the Middle Ages were intended to form one whole, and appear to us almost a necessary part of the Gothic construction, although it is certain that the walls of Gothic buildings are not always so constructed. The interior is sometimes left rough and covered with plaster, and in country churches the exterior also, the walls being built of rubble only. But the double wall is clearly the more scientific construction, and the question is, when did this originate?

* The church of Norrey did not belong to the abbey of St. Stephen's, at Caen, but to that of St. Ouen, at Rouen; it was therefore more natural to copy the cathedral of the diocese than the great abbey church, which was in some degree a rival to it.

We have it in Normandy, in the walls of the abbey church of Bernay, in the first half of the eleventh century, and at Caen, and in the Tower of London in the latter half of the same century. Was it used in other countries at the same period? A number of instances may be cited to the contrary, but these prove nothing. Double walls were of all periods. The passages in the thickness of the wall are the best criterion whether this mode of construction was understood or not. Do they occur in the buildings of other countries in the eleventh century in the same manner as they do in the Anglo-Norman buildings?

FABRICATION OF A CEMENT WITH A BASIS OF PLASTER OF PARIS, OR GYPSUM.

THE plaster is first burned, or roasted, in the ordinary way, in an appropriate furnace, so as to drive off the water. After this, it is broken into small fragments which are immersed in a solution of alkaline silicate, containing an alkaline carbonate. The solution which answers best is composed of silicate of potash, containing a sufficient number of equivalents of carbonate of potash to avoid the precipitation of the silica, in the following proportions:—0.880 kilog. (1.94 lb.) of silicate of potash containing 0.255 kilog. (.56 lb.) of carbonate of potash, in 4.54 litres (a gallon) of water, a solution having a specific gravity of 1.200, but which may vary according to the use for which the cement is intended. As, for example, it can be employed of the strength above indicated in a great many cases where the best quality is required; and, if an ordinary cement is only necessary, it can be diluted with two parts of water to one of the solution. If a cement be required to harden slowly, sulphate of potash may be added to the carbonate, so that the indurating action of the silica upon the plaster may thus be varied in tone at pleasure. After having left the plaster steeped in the solution for twenty-four hours or so, it is taken out and left to drain in a compact mass, in order that the diffusion of the solution through the plaster may take place more effectually; the cement is then taken back to the furnace, and reheated to 150° or 250° C. (302° to 482° Fah.), to drive off all the water, after which it is ground to powder, and can be coloured to any desired hue by mixing with a pigment.—*Builder.*

THE HEALTH OF DUBLIN.

(From the Registrar General's Weekly Return.)

IN the Dublin Registration District the births registered during the week ending April 7, amounted to 184—83 boys and 101 girls. The deaths registered during the week were 129—56 males and 73 females. The deaths from fever were 10. There was one death from measles, and five from whooping cough. Convulsions carried off nine children. There were nineteen deaths from bronchitis, and three from pneumonia, or inflammation of the lungs. Phthisis or pulmonary consumption was fatal in 21 instances. Apoplexy was the cause of two deaths, and paralysis of one. Five deaths were the result of heart disease. One was ascribed to the "rupture of an aneurism." Two deaths resulted from accidents, and one from suicide.

The number of deaths registered in the entire of the Dublin Registration District during the week represents an annual ratio of 21 in every 1,000 of the population by the census in 1861. The deaths registered in No. 1, North City District (Summer-hill), afford an annual ratio of 23 in every 1,000 of the population—the Mater Misericordiae Hospital is situated in this district; in No. 2, North City District (Coleman-street), which includes the Rotundo Lying-in Hospital and Jervis-street Hospital, the deaths registered amounted to 25 per 1,000; and in No. 3, North City (Blackhall-street), to 49 per 1,000;—the North Dublin Union Workhouse, the Hardwicke and Whitworth Hospitals, and the Richmond District Lunatic Asylum, are situated in this District. In No. 1, South City District (Meath-street), which includes the South Dublin Union Workhouse, the Cork-street Fever Hospital, and Steevens' Hospital, the deaths registered afford an annual ratio of 14 per 1,000; in No. 2, South City District (High-street), the ratio was 20 per 1,000; in No. 3, South City District (Peter-street), which includes the Coombe Lying-in Hospital, and the Meath and Adelaide Hospitals, it was 18 per 1,000; and in No. 4, South City District (Grand Canal-street), in which Sir Patrick Dun's and St. Vincent's Hospitals are situated, it was 23 per 1,000. In the Suburban District of Rathmines the annual ratio was 17 per 1,000; in Donnybrook it was 14; and in Kingstown, 6 deaths per 1,000 of the population by the census in 1861.

At the Observatory of the Ordnance Survey Office, Phoenix Park, the mean height of the barometer during the week was 29.868 inches. The highest daily mean reading (30.176) occurred on Friday, and the lowest (29.581) on Sunday. The temperature was highest on Sunday, when the thermo-

meter registered 52.5°, and was lowest on Wednesday, the mercury having fallen to 29.0°. The mean temperature during the week was 41.8° (in the corresponding week of 1864 it was 51.6°); the lowest daily mean (37.8°) occurred on Wednesday, and the highest (44.1°) on Friday and Saturday. The mean of the dry bulb for the week was 41.4°; and of the wet bulb 35.5°. The mean humidity of the air during the week was .860—complete saturation being represented by 1.0. The rainfall during the week measured .889 of an inch.

L A W.

Roche v. Robertson and others.—This was tried at the recent spring assizes for the city of Cork, before Mr. Justice O'Hagan and a special jury. The action was brought by Mr. A. D. Roche, stationer, &c., of No. 29, Patrick-street, Cork, to recover damages, laid at £1,500, from the defendants, the proprietors of the next house, No. 30 (a new drapery establishment called "The Munster Arcade"), for alleged injury to his house and business consequent on the taking down and rebuilding of the party wall; also for certain alleged encroachments, and for obstruction of light and air. It appeared that the defendants had at first raised on the party wall, but afterwards finding same in a dangerous state had it taken down and rebuilt, by which a certain amount of injury had resulted to plaintiff; and to cover this and all other alleged injuries defendants paid the sum of £400 into court. Mr. N. Jackson, county surveyor; Mr. O. Edwards, C.E.; Mr. H. Hill, builder and architect; Mr. Alex. Deane, builder and architect; and Mr. Burke, all of Cork, deposed that the plaintiff's house had been so much injured by the works that the whole house should be taken down and rebuilt, and estimated the cost of a new house at £650. On cross examination Mr. Deane admitted that he held a mortgage on the house, and Mr. Burke, who had known the house for many years, that "it was always an old house," and "always a little dangerous." Miss Skillen, proprietress of the house No. 28, was also called to prove that her house, next but one to the defendants, had suffered injury from their operations. On the part of defendants, Mr. E. P. Gribbon, architect and surveyor, of Dublin; Mr. W. Fogarty, of Dublin, the architect under whose direction the defendants' works had been carried out; Mr. W. Atkins, architect, of Cork; Mr. R. Evans, builder, of Cork; and Mr. P. Scanlan, builder, who had conducted the works for Mr. D. O'Callaghan, the contractor, were called to prove that the plaintiff's house had suffered no injury beyond what was involved in the taking down and rebuilding of the party wall, and considered the sum of £200 ample for the repair of same, and that it would suffice to put the house in a much better condition than before; the remaining £200 lodged being for inconvenience, loss of business, &c. It was also proved that defendants, through their solicitors and architect, had repeatedly offered to repair the house, and to submit the matter to arbitration, but that plaintiff refused, stating that if he permitted his house to be repaired by defendants, and "put in apple-pie order," he would get no damages. His lordship charged the jury, observing that the main question lay between repairing and rebuilding. The jury, after some consultation, returned a verdict for the defendants. Counsel for plaintiff—Messrs. Butt, Q.C., Chatterton, Q.C., Jellett, Q.C., and Johnson; Solicitors—Messrs. W. V. and R. Gregg. For defendants—Messrs. Clarke, Q.C., Heron, Q.C., and Hickson; Solicitors—Messrs. MacCarthy and Hanrahan.

NOTES OF NEW WORKS.

A much-needed improvement has been completed upon the older part of the building connected with the County Goal at Armagh. The entire front facing the Mall has been remodelled, the old narrow windows have been replaced with large modern sashes. A new roof and chimneys of cut stone have been added, with a large parapet of finely cut Carland freestone. The entire front has been dressed down, giving it the appearance of an entirely new structure, and rendering the building an ornament to the locality. In the right wing, the inside has been completely cleared of the old cells, and turned into a dwelling-house for the governor. Amongst the changes effected by these improvements, the old drop, from which many a culprit was launched into eternity, has been taken away, and the treadmill has also been removed. The designs were by Mr. Boyd, architect, of Belfast; and the works have been very creditably carried by Mr. Thomas Ross, builder, of Armagh. Cost, about £1,800.

Kilmurry church, county Limerick, has been reopened after undergoing extensive alterations and repairs. It has been repewed, a new vestry room built, and the aisles and side porch beautifully tiled.

A new Baptist church was opened in Great Victoria-street, Belfast, on the 8th inst.

The new Presbyterian church at Magherafelt, county Derry, is to be commenced immediately. Messrs. Boyd and Batt, architects, Belfast.

MISCELLANEOUS.

The Monthly Scientific Meeting of the Royal Dublin Society will take place on Monday evening next, when a paper on "Submarine Earthquakes and Volcanoes" will be read by Dr. J. M. Barry.

The first general meeting of the Dublin Masonic Hall Company was held on the 11th inst. at the Commercial Buildings, Dame-street, his grace the Duke of Leinster in the chair. It appears from the report submitted that "all the capital at first proposed for the new Masonic Hall (£8,000) had been subscribed, and that applications for shares had been made to a greater extent than could be supplied. Plans and designs of Mr. Holmes, of London, had been accepted, and the work would be commenced as rapidly as possible. The report of the finance committee showed that £2,330 had been lodged on deposit receipt in the bank, and that £424 12s. remained on call. Since the original lodgment a deposit receipt, £330, had been added. The total expenses of getting the company up had been only £260 14s. The directors and building committee had met 32 times. The board returned their warmest thanks to his Grace the Duke of Leinster for his offer of £200 for the purchase of the third house in Molesworth-street, and to the different Dublin lodges who offered to assist." A vote of thanks to H. B. Johnston, Esq., hon. sec., for the untiring zeal and great ability he exhibited in bringing the company to its present successful position, was unanimously passed.

The Whitworth Hall, Drogheda, was opened on the 3rd inst. by a concert. The seats are arranged so as to provide accommodation for about 600 in the body of the hall, and 200 in the gallery.

The Guinness Testimonial will be a statue in bronze, to be placed in the new street leading from Kevin-street to St. Patrick's Cathedral. Mr. J. H. Foley, R.A., London, has been entrusted with the work, which he proposes to complete in eighteen months.

Mr. Henry Macmanus, R.H.A., will deliver a course of Four Lectures on the Fine Arts in the Theatre of the Royal Dublin Society. The first will be given on Tuesday next. The lectures will be free to the public.

By last week's return of deaths in the various cities throughout the United Kingdom Dublin appears to be the healthiest of all the great centres of population, while Salford, Liverpool, Manchester, and Glasgow are all much higher. The following is the rate of mortality per 1,000—Dublin 21 deaths in each 1,000 inhabitants; 27 per 1,000 in London, 28 in Edinburgh, 32 in Bristol, 32 in Birmingham, 42 in Liverpool, 35 in Manchester, 44 in Salford, 33 in Sheffield, 35 in Leeds, 26 in Hull, 25 in Newcastle-upon-Tyne, and 33 in Glasgow. This is an important fact, particularly for life assurance companies; some offices allege that Irish lives are more risky than English or Scotch, but the Registrar-General's returns flatly contradict this assertion.

It is said that another of the lions for the Nelson Column has been cast; this is the second time such rumours have been circulated; let us hope they are well founded. It occupied nearly six years to get one lion done, or at least in such a state that it was exhibited in the sculptor's studio, an event noted in many minds by connexion with an egregiously absurd suggestion that all which then needed to be done was to make slight modifications in the head and tail of the beast as designed, in order to produce its three fellows for Trafalgar Square. It augurs ill for the originality of the second reported lion to find that not more than two years have elapsed since his elder, we hope not imaginary, brother was said to be horn.

TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

All Communications respecting the DUBLIN BUILDER, should be addressed to MR. PETER ROE, 42, Mabbot-street, to whom all payments for Subscriptions and Advertisements must be made.

The back numbers of this Journal, from its commencement in January, 1859, can be had on application at the office.

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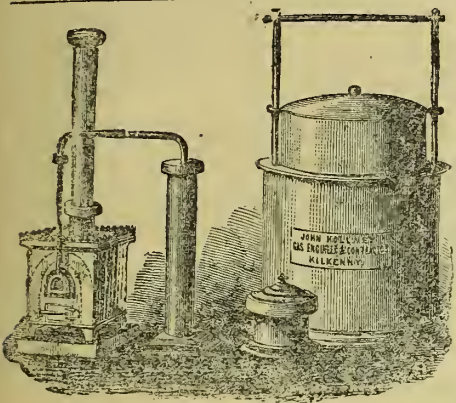
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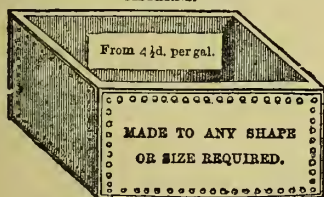
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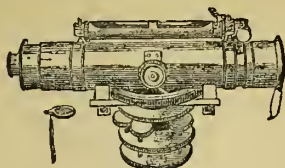
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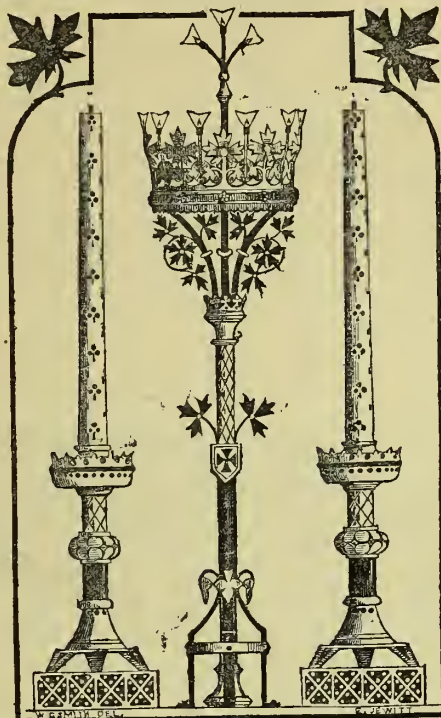
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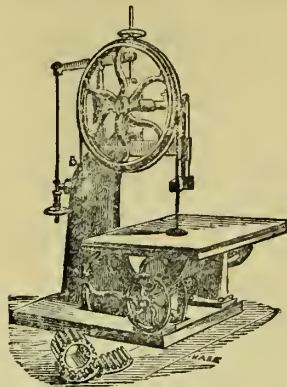
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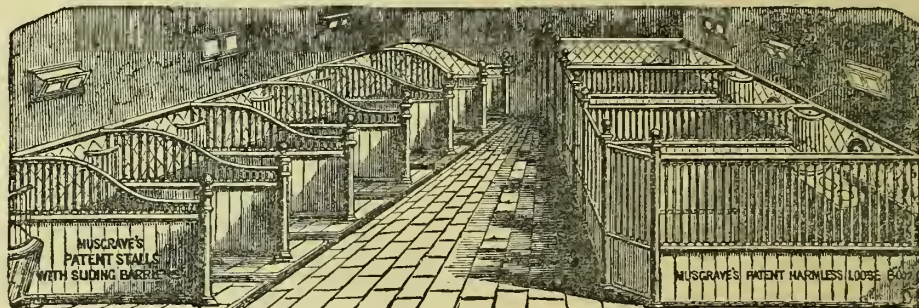
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According to the Plans and Specification, to be seen in the hands of the resident Minister of the Parish up to the 27th day of April, and afterwards at the Office of the Commissioners in Dublin;
FOR ENLARGING THE CHURCH OF
CAMUS-JUSTA-BANN Co. Derry.
AND FOR REPAIRS OF THE CHURCHES OF
KELLISTOWN Co. Carlow.
KILKEBAN (Mayo) Queen's Co.
MONAMOLIN Co. Wexford.
STRATFORD-ON-SLANEY Co. Wicklow.

According to the Plans and Specifications, to be seen in the hands of the resident Ministers of the Parishes.

The lowest Proposal will not necessarily be accepted.
Each Proposal to be forwarded sealed, prepaid, and addressed thus:—

"Proposal for the Church of
"The Ecclesiastical Commissioners for Ireland, Dublin."

SAINT MARY'S CATHOLIC CHURCH, RATHKEALE. TO BUILDERS.

ESTIMATES will be received from competent Builders for the ERECTION of the NEW CHURCH of ST. MARY, RATHKEALE, Co. Limerick, according to Plans and Specifications, to be seen at the Office of Mr. J. J. MCCARTHY, Architect, 183, Great Brunswick-street, Dublin.
Tenders to be forwarded to the Very Rev. James O'Shea, P.P., Rathkeale, County Limerick, on or before the 1st June next.
The lowest or any Tender will not necessarily be accepted on the above day.
Rathkeale, 16th April, 1866.

TO CONTRACTORS.

TENDERS REQUIRED FOR HEATING DOWN LUNATIC ASYLUM.

TENDERS are invited from competent Persons for HEATING the above Building, in accordance with the conditions prescribed, which can be seen at the Office of the Architect, HENRY SMYTH, Esq., Downpatrick.
The Tenders are to be sent to R. M. ARDAGH, Esq., Office of Control, Dublin Castle, on or before the 21st day of May next, endorsed "Tender for Heating Down Lunatic Asylum."
The lowest or any Tender not necessarily accepted.
April 20th, 1866.

TO BUILDERS.

PROPOSALS will be received for the Erection of a New National Bank House, and Out Offices, at Rathkeale, Co. Limerick. The plans and specification for same can be seen at the office of the Architect, WILLIAM F. CALDBECK, Esq., 24 Harcourt-street, Dublin.
Tenders for the above to be sent on or before Thursday, the 24th.

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MISS FENNELL,
MISS K. CRUISE,
MR. TOPHAM,
M. E. KELLY,
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Pamphlet. By The M'ANASPIE. Containing a review of the different Designs exhibited in the City Hall, with the names and prior works and marks of distinction of the different Exhibitors.

Also author of the Pamphlet on the iniquity of the present mode of levying the general taxation of these countries on the consumer, and collecting it from two items, which is the producer, and monopoly of trades and trade, and their bad effects on the industry, prosperity, peace, and contentment of the people, and the permanent stability of the empire at large.

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DRAUGHTSMAN,—one with some knowledge of ornament as applied to iron work would be preferred. Apply, by letter addressed "Draughtsman," at the Office of this paper, stating age, salary, and where last employed. For a suitable person the situation would be permanent.

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Suitable for all purposes.
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In New and Fashionable Fabrics,
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HYAM'S SUMMER TROUSERS AND VESTS, Alike,

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To prevent mistakes and disappointment, it is particularly requested that all parties make sure that they are at No. 30, DAME-STREET, this being the only Establishment B. HYAM has in Dublin.

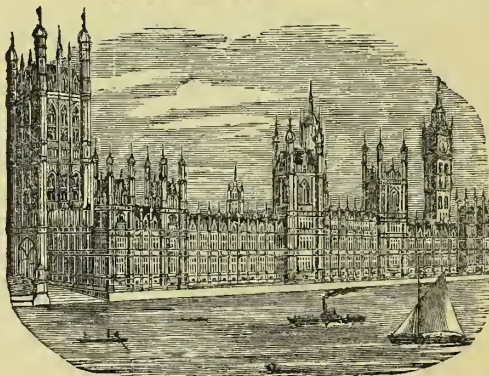
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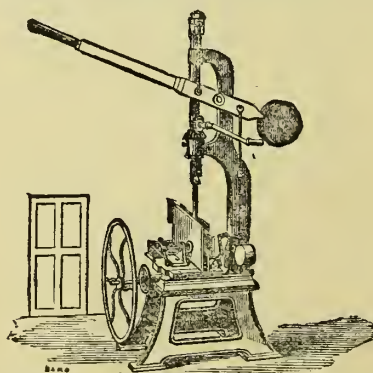
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The Dublin Builder.

VOL. VIII.—No. 153.

DWELLINGS FOR THE WORKING CLASSES.

WE are rejoiced to perceive that Legislation on this subject is about to be extended to Ireland as well as to England and Scotland. Some steps were taken in this direction, some years back, in the act extending the provisions of the several Acts for Land Improvement to the erection of labourers' dwellings, but this act was very partial in its intended application, and was so encumbered with preventive checks, and every imaginable precaution, as to be as little tempting, as it could possibly be contrived to be, to proprietors to avail themselves of its provisions. In most measures of this kind it would appear as if Government had either actively resisted pressure as long as they could hold out, or had received the proposition with the passive resistance of a deaf ear, until the demand became so loud and continuous as to make itself heard, and forbid any further resistance; and then a natural, but ill-advised, reaction took place, from declining to give at all, a sudden transition to giving more than was either necessary or judicious. The two things asked for, and absolutely necessary for the development of "land improvement" in Ireland, were capital at a fair and moderate rate, and powers for applying it to the land and charging the land with it—the latter were even more necessary than the former. In their eagerness to pursue an idea suddenly taken up, the Government of the day have made the mistake of making the advances at a rate of interest so far below the market rate as to entail a small loss on the lender, and expose the borrower to temptations to misappropriation of money got so cheaply and repayable on so easy terms, which has rendered necessary perhaps, but certainly has suggested such limitations and imposed such conditions on the advances as to exclude probably more cases from participation in the advantages offered than those which have come within the scope of the scheme. Now it is very certain that if a thing is worth doing at all, it is worth doing well, and doing well in this case is framing the regulations in such a way as to exclude no case which comes within the intention of the Legislature, and in which proper security is given for the repayment—and we hope that this will be the leading principle in the Act for the Improvement of Labourers' Dwellings in Ireland. We presume that the rate of interest will be fixed at four per cent., as in the English bill, and that the annuity for repayment will be taken at about the average paid by Government themselves. The Funds are now three and a-half per cent., and there seems but little probability of their ever, or at least for many years to come, returning to par, so that three and a-quarter per cent. would seem to be the highest rate at which these annuities could be calculated

so as to repay the capital advanced without loss. At this rate the annuity spread over thirty years—the limit fixed by the English bill—would be a shade over six per cent.; if to this rate be added ground rent, taxes, insurance, maintenance, and management, there will be so little left for interest on the portion of capital advanced by the borrower himself, that there will be very little temptation to any one to engage in the matter as a commercial speculation. The chief value—in many cases the only value—to the speculator will be the reversion, and thirty years of wear and tear of such dwellings is generally very trying to their constitution; considering this we should regret very much to find the operation of the bill either fettered by narrow limitation of its application, encumbered with unnecessary conditions, or narrowed to particular classes of buildings. As regards the parties qualified to become borrowers under the act, we are convinced that there should be no limit whatever, that any individual, or set of individuals—no matter what the form of their association—should be competent to become borrowers, and that as regards the amount to be advanced in each case, it should range from the amount that may be necessary for the erection of a single cottage up to the largest sum that the parties entrusted with the management of the fund may find reason to believe can be beneficially expended in furtherance of the object of the measure. In the same way the period of payment should, in our opinion, be left to be settled for each case according to its own peculiar circumstances varying in annual amount in proportion to the number of years it is spread over. The nature of the security for the repayment should also be left open to adjustment as each case requires, within certain broad limits, and also the proportion borne by the amount advanced to the value of the security for repayment. The conditions imposed should be very carefully considered so as to ensure, on the one hand, the improvement of the dwellings of the working classes, and the corresponding social development consequent on rendering habits of order, cleanliness, and decency possible, which is the main object of the movement; and on the other hand, to permit of this being attained with a moderate margin of profit to the undertakers. Patriotism and philanthropy are great virtues, but they are great only when they are uncommon. We have had the average of both among us most conspicuously for generations, but the evil we are now discussing has grown up with them to its present enormous dimensions, when nearly half of the 50,000 and odd families of Dublin are living each in a single room. As the virtues therefore have failed, we must turn, if we wish to succeed, if not to the vices, at least to those neutral qualities in our nature which take their complexion from the circumstances in which they are developed, we must appeal to self-interest, and if we can succeed in convincing people that they can at the same time do a good action, and make it pay, we shall be pretty certain of success.

THE AFTERNOON LECTURES.

ON Wednesday, the 25th ult., the third of this series of Lectures was delivered in the Theatre of the Museum of Irish Industry, by the Rev. Dr. Russell, President of Maynooth College, on "The Life and Labours of Cardinal Mai." The learned lecturer com-

menced his lecture by a brief notice of the materials anciently used for MS. purposes. Parchment would appear to have been the material earliest in use, which was, however, substituted by papyrus, prepared in Egypt, and thence diffused at a very cheap rate throughout the then known world. The troubles attending the break-up of the Roman Empire, and the overrunning of the Eastern Empire by the Turks, diminished, and ultimately annihilated the papyrus as an available material, and necessarily parchment became generally in use again. From a very early period it had been the custom to erase the writing on parchment or papyrus, and use the material again. Some sorts of papyrus were specially prepared for this purpose. From the process of rubbing, or scraping, to prepare the surface for writing, these MSS., thus used a second time, acquired the name of "Palimpsests." They commence in the Western Empire at a very early date; in the Eastern in the 12th and following century. These Palimpsests have been the means of restoring to the world many precious fragments of Greek and Roman authors which had previously been lost; among the most notable of which was Cicero's "*De Republica*," which perhaps was the most lauded and quoted of all his works by other authors Pagan and Christian; which had been sought for in vain at sundry times and in every probable or possible spot, by ardent literateurs, with all the facilities that wealth and power could command, until it was discovered and published from a Palimpsest by Cardinal Mai, within the present century. The lecturer gave an admirable account of the difficulties attending such labours as those of the Cardinal, and of the amount of patient toil, deep learning, and ready sagacity required for the task. His remarks were illustrated by diagrams and photographs of MSS., which it seemed a mere matter of impossibility ever to have deciphered, the surface being covered in one instance with three several writings, in apparently inextricable confusion. The lecture was listened to throughout with an eager attention to which it was entitled, as well from the interest of the subject, as from the modest and unpretentious, but thoroughly effective manner in which it was treated.

THE SHELBOURNE HOTEL, STEPHEN'S GREEN.

THE new proprietors of the Shelbourne, Messrs. Jury, Cotton, and Goodman, desirous of making their hotel as complete as possible, have purchased a plot of ground from the Kildare-place Society, and that nothing may be wanting to make their establishment rank with the palatial hotels of Paris and London, have given their builder, Mr. S. H. Bolton, of South Richmond street, a *carte blanche* for making the alterations and erecting the new buildings. From the high character for integrity Mr. Bolton sustains, we are sure this confidence will not be misplaced; still it must be a matter of congratulation to Mr. Bolton. From the class and extent of the works the outlay for building cannot be under £16,000. Mr. Bolton is sparing no effort to have the hotel ready for occupation in August, having over 200 men employed on the works, assisted by his steam hoists which he has introduced to the building trade here. The entire of the old building will soon be swept away. From the large quantity of materials required the old floors had to be temporarily supported, which led many to think they were to form part of the new building, which is not the case. The hotel will have all the conveniences of the modern hotels, including hydraulic lift for elevating the fashionables to their apartments, also a spacious and ornamental vestibule, where the Vartry freed from its iron prison will display its sparkling brilliancy in all its purity. On the whole, no doubt, the building will reflect credit on the architect, Mr. M'Curdy, as well as the builder, and we are sure from the spirited manner with which the proprietors are acting they are certain of success.

MUSIC IN CORK.

THE taste for music in Cork has of late been developing itself; choral societies, singing classes, concerts, musical soirees are so abundant that it is impossible to speak in praise of one without having to eulogise a host of others. Amongst the most eminently popular associations of this nature is the Christ Church Choral Union, which gave its last concert for the season on Friday evening, the 27th, and which was in every respect a complete success. The performers consisted of most of the best amateurs of the city to the number of nearly 100, among whom were Mr.

O'Flynn, Miss Austin, Miss Lavers, Messrs. Connolly, Milner, Hill, B. Gibbings, P. McCarty, W. R. Atkins, &c., &c.

The musical movement in Cork has also called into play considerable powers of composition. Vocal and instrumental pieces of more or less excellence have lately proceeded from the pens of some of the Cork amateurs, amongst which may be mentioned the dance compositions of Gerald de Boutville (a gentleman who writes under this name). "La Fanfare," a grand galop, by Mr. W. R. Atkins, another local musician, has also been very much appreciated. This young gentleman's name is also well known to the public as the composer of the music of a very pretty song, the words of which are by Mr. S. N. Townsend, whose poetical talents are also well known. The song alluded to is "Oh take me from this scene, this place," and referring to which the *Cork Constitution* remarks:—"This is a very pretty ballad, the air being remarkably sweet and simple, and the arrangement very good." The above facts show that the noble art of music is fast gaining ground in Cork, and it is to be sincerely hoped may long continue to advance.

LIMERICK ART EXHIBITION.

On the 17th ult. there was opened at the "Athenæum," in the City of Limerick an Exhibition of Works of Art and Manufacture, which reflects credit on the managers of that Institution. The inaugural ceremony was performed by the respected and esteemed Mayor, Peter Tait, Esq., in presence of a large assemblage of the elite of the city and county. The large Concert Hall, which was specially devoted to the opening ceremonial, and reserved for holders of season tickets, had a strikingly imposing appearance. The proceedings commenced by the reading of an address to the Mayor, by J. Counihan, Esq., Hon. Sec. We can afford space for only a few extracts therefrom to shew the object contemplated by the promoters in bringing together such a valuable collection of works of art in their ancient city. The address says:—

"The object of the committee of this institution has not been so much to gather a large number of works as to present those which are of high value and genuine worth. They were anxious to procure all of ancient and modern origin which would exemplify genius, manifest skill, and promote public taste; and in this respect they trust they have been successful. Thanks to the nobility and gentry of this county and city, to the authorities of the South Kensington Museum, and to the liberal and kind owners and controllers of other private and public collections, our Hall and the various departments connected with it, bear on their walls many paintings which are unrivalled, water-color drawings that may be studied with profit even by proficient, and, in evidence of local advancement, sketches that do honour to the youth of the South of Ireland, and must enlist sympathy and support for those schools of art and other institutions, in which they were initiated and are instructed. On our walls, too, are those noble pictorial tissues, the Seven Tapestries of Arras, lent us by a possessor who truly values art. Other specimens of tapestry too we exhibit, beautiful in design, the elaborate and exquisite work of fair ladies of our ancient and honoured city. Photography, which is making such rapid progress, and which enables us to behold again, with even greater accuracy than the pencil of the limner, scenes we prized and faces we loved, is represented here in effects that cannot be surpassed. In mosaic, marble, gold, silver, ivory, and other material, we have productions of Oriental and European skill which are both beautiful and valuable. Altogether we have in this establishment a collection which this city and county may well deem an honour, and which, ample and rich as you behold it, is not exhaustive of the treasures that both possess. Our object in inaugurating this Exhibition has been chiefly to assist an institution which confers benefit on the community amongst whom we live, which embraces a school of art that competes with the first of its class in this country and England, which enables our young fellow-citizens to perfect themselves in various accomplishments only to be acquired while youth remains, and which are a resource within doors for occupation, or for support in the world abroad. The Athenæum, devoted to intellectual art, to wise social concord, and to public usefulness, has been only in part accomplishing its mission; the committee desire to make it a perfect success, and deem that they could select no better agency than this Exhibition. For these purposes they have obtained from the studios, ancient masters, modern artists, and existing schools in this country, the array of paintings that adorn their rooms, the gems of art contained in the

cases in this hall, the various handiwork of the natives of other lands, wonderful in the minute and delicate character of their design and execution; and, if last named, most important to us, in their immediate utility, samples of home manufacture, which have obtained celebrity in far distant climes."

The Mayor then replied. After thanking them for the honor conferred on him in opening their Exhibition, which was "one of the finest provincial displays he had ever beheld," he concluded his remarks thus:—

"I feel proud because I know that such collections as this tend to excite emulation of the nobler kind amongst the working classes, and are calculated to direct their thoughts to the best pursuits. But independently of these there is a more immediate reason for doing all in my humble power to aid you, and it is the consideration which immediately belongs to your position as a committee. I know the deep interest you all feel in the fate of the Athenæum. I know that your object is to place it in a more extended sphere of usefulness—to place it on a more distinguished literary and more solid financial basis. I sympathise with you fully. I am aware of the good such an institution as this is capable of producing, and would be wanting in my position as a mayor, as a citizen, and as the Mayor of your city, if I did not co-operate. I beg to thank you again, and have much pleasure in declaring your Exhibition open."

The Exhibition having been formally declared open, the band of the 73rd Regiment, under the direction of its efficient bandmaster, Herr Zeigler, performed a march specially composed by William P. O'Donoghue, Esq., Mus. Bac. Ox. This was followed by several concerted pieces of music.

Some idea of the works brought together in this gem of an Exhibition may be formed from the following, taken from the local *Chronicle*:—

In the Chancery Hall is the collection of oil paintings by ancient and modern masters, which is the largest ever brought together at any previous exhibition in the South of Ireland. The Gobelins Tapestries from cartoons by Raphael. The works of Roumain, Sir P. Lely, Sir T. Lawrence, Hogarth, Domenichino, James Holland, Sir W. Calcott, Salvator Rosa, Vandyke, C. R. Leslie, Catterson Smith, Sir Joshua Reynolds, Rembrandt, Murillo, and other eminent men. The Water-colour Room contains the productions of eminent modern masters, from the South Kensington Museum; those of ladies and gentlemen residing in Limerick and its vicinity, and pupils of the Christian Brothers' Schools, Limerick and Cork. The Photographic Room contains the *fac similes* of Raphael's cartoons from the South Kensington Museum; representations of Works of Art from the same institution, and a vast and valuable collection placed at the disposal of the committee by contributors in this city and county. Another department is devoted to the exhibition of original illuminated manuscripts, pen-and-ink sketches, coloured photographs of architecture and other works, chiefly of those in Italy and in Paris. There is a magnificent collection in the body of the hall, being electro-plated copies of the Regalia in the tower of London, and some specimens of gold and silver work of several centuries ago, the originals being in the South Kensington Museum. Mr. J. T. MacSheehy exhibits Chinese and Indian works of art, of great rarity and value, most of them taken from the Emperor of China's summer palace at Pekin when it was sacked and burned by the allies during the late war. There is a splendid table inlaid with various kinds of foreign marble, sent for exhibition from Curraghchase. A magnificent contribution of eight very valuable paintings worth about £1,000 each, the property of John Lowe, Esq., D.L., Sunvale, have been sent by that gentleman for exhibition.

There are some inaccuracies in the catalogue, which of course will be corrected in a second edition; a want of uniformity is also observable.

It is to be hoped that the committee and managers of the Exhibition may meet with that amount of favor and encouragement from the nobility and gentry of the neighbourhood, which will enable them to place the valuable institution with which they are identified, and on which they have devoted their earnest attention, on a permanent footing. The benefits to the artisan classes of the community to be derived from these schools of art, have been frequently noticed in the pages of this journal. There are many localities in our country in which we would wish to see institutions similar to the "Limerick Athenæum" established, and we trust that the result of the present exhibition may encourage others to go and do likewise for the public good. A word of thanks, in conclusion, to the

hon. secs., and to Mr. Broome (who represents the South Kensington Museum), for their courtesy and attention on the occasion of our visit.

THE EXHIBITION PALACE AND GARDENS.

THE opening of the Exhibition Palace on the 7th inst. is just now the chief topic of conversation, and the only exciting one—the Reform Bill division being over—to the Dublin public. Debate runs high as to the amount of success which an undertaking so great and so wholly unprecedented in Dublin may achieve; but of this every one may rest assured: if the committee meet the public with liberality and urbanity, and the public only respond with one half the energy and patriotism they should possess, the result will be a triumph. Failing this, Dublin must be prepared to lose a delightful place of amusement, and to involve in heavy loss a very spirited company. We do not, however, apprehend any such disastrous result, but we would impress on our readers that something more than consideration of the individual gratification of each is demanded here, and an extra amount of support on public and patriotic grounds is the duty of all those who can afford to do so.

Grand musical performances of an attractive character are fixed for the first two days. Madame Lemmens Sherrington, Miss Fennel, and other well-known vocal names, with a band under the conductorship of Mr. Levey, are a strong attraction. The gardens are now, after the few genial days, looking charming, and everything looks hopeful for a grand success.

MONTHLY REPORT OF OFFICER OF HEALTH.

WE give the report of Dr. Mapother, officer of health for the city, for month ending 21st ult. We are glad to find that the sanitary officers are bestirring themselves in the inspection of houses let in tenements; attention has been frequently called in our pages to the neglected state in which premises in the hands of the "house-jobbers" have been kept;—it is stated that we have in this city nearly 9,000 houses which demand constant inspection. The report says:—The deaths recorded by the Registrar-General during the past four weeks have been 656, against 554 during the corresponding month last year, and 660 during the preceding month. The death-rate, was, therefore, 1 in 388, while it was in London and suburbs 1 in 450, in Central London 1 in 484, in Liverpool 1 in 310, and in Glasgow 1 in 364. In the seven dispensary districts the death rate has been as follows:—Summerhill, 1 in 494; Coleraine-street, 1 in 547; Blackhall-street, 1 in 258 (or subtracting the deaths in the North workhouse, 1 in 455); Meath-street, 1 in 193 (or subtracting the deaths in the South workhouse, 1 in 452); High-street, 1 in 414; Peter-street, 1 in 616; Grand Canal-street, 1 in 540. Zymotic diseases produced 123 deaths; of these fever caused 44, or 7 more than the corresponding number last year. The Hardwicke and Cork-street Fever Hospitals admitted 241 cases during the month from city dwellings, especially in the following neighbourhoods:—Coombe, Mns-street, Montgomery-street, and Great Britain-street. Hooping cough was excessively fatal, 25 deaths having been recorded against 7 during the corresponding month last year, and 19 during March last. It prevailed especially in the neighbourhood of Golden-lane, and Essex-street. Diarrhoea caused 17 deaths, against 12 during April, 1865, and 16 during last month. Nearly all the persons who died from this cause, however, during the past four weeks, were aged inmates of public institutions. As the present hot and dry weather would promote this class of disease, directions have been given to have the street channels flushed and the sewer traps filled with water in the poorer neighbourhoods. Consumption produced 81 deaths, and bronchitis 121, which accounts for the high general mortality of the month. The Inspector of Nuisances and his assistants have visited and directed the cleansing of 315 premises in which fever or other contagious diseases had arisen, or which were complained of at the City Hall—85 nightly lodging houses, 23 bakehouses, 127 slaughter-houses, and 3 knackers' yards. The sanitary sergeants visited 452 houses set in tenements, and recorded 2,829 sanitary defects in them. They also visited 1,500 such houses for the second time and found that 2,741 sanitary defects noted previously had been remedied without prosecution. These defects were, however, of a minor character, the removal of which was inexpensive.

COMPETITIONS, THEIR PRESENT BEARING ON THE ARCHITECTURAL PROFESSION AND THE PUBLIC, AND WHAT THEY SHOULD BE.*

IN treating of the present subject I feel I am treading on what some people would call dangerous ground; and, therefore, ere I begin I must beg of all those whom I address, as well as of those who may in any way come across this paper, to believe me to be perfectly sincere when I say I am in no way actuated by personal or petty motives, and in penning the following lines individual prejudice and spite are absent from my thoughts. The matter I would wish to deal with is one in which I feel our profession as a body requires and demands reform, and it is on this broad basis that I propose to take it up, in hopes that I may draw from this Institute an expression of opinion, followed by action so united and decided as may shew to the public at large and the profession elsewhere, that, though Irishmen, we can do something to grapple with what we believe to be an evil, even though that evil be great, and have a strong hold upon the public.

To begin a paper on such a subject as the present one, I should, perhaps, first treat of "Competitions" as a whole, and then proceed to deal with the *pros* and *cons* incident to my subject; but I would be only wasting time and insulting your common sense if I were to linger over mere definitions. I accordingly pass on to the *pros* and *cons*. I beg of you to remember that I treat of Competitions as they are, and what they should be, according to my own ideas of the subject only, and I throw out my remarks to provoke discussion, and leave the verification of them in your hands.

Competition, I cannot but think, as it is at present, is a great and grievous ailment under which we suffer—not quite so bad in its way as the rinderpest, which knows no anodyne, for I sincerely believe the cure of *our* disease lies in *our own hands*—so I must beg of you to be more than patient with me while I urge on you the great magnitude of the question.

The great points in favour of Competition, so far as I have been able to glean them, are—the benefits to be derived by the young or unknown architect in the field open to all, and the necessity that this gives for the elder and recognised practitioner to keep himself up to the mark, and even with the times; and there can be no question but that these two points are most essential, and would be productive of the greatest benefits to the profession and public, if competitions were but fairly and honestly carried out. You may observe that I invariably class the profession and the public together, and I do so advisedly, for I cannot but feel that the interests of one and both are identical, so far as they relate to matters of competition.

The *pros* thus easily and quickly disposed of—for I think we must all acknowledge the truth of them in abstract principle, and there is no use in wasting time over details—you must permit me to deal with the *cons* in my own way. I accordingly begin by asserting—and that very unhesitatingly—that the system of competition as it at present exists, in every way you look at it, is practically in opposition to all the arguments in its favor. What system, I ask, *could* contain more abuses or hide a more iniquitous trade in underhand dealing and jobbing? You must understand me that I am speaking of the system generally, and have not in my mind any thought of individual competitions, competitors, or judges. On this last word 'judges' I pause, for I feel that under this head will be found the most vital of the ills that competition is heir to.

As professional men are we not led to believe, nay is it not forced on us, that it is our duty to lead the public mind on such points as these: what are true principles in art? what is in true taste and what is not? (else, where is the use of our expensive special education, of our lives given to the study of the adaptabilities of all arts, of truth and stability in architectural art?); I ask you, do we do so under the present system of competition, and I know your answer must be 'we cannot'—and *wherefore?* because naturally it is success over our fellows we look to, and to ride the winning horse in our field we *must* pander to the vitiated taste of those in whose hands the crowning of our success lies, our 'judges.' After you I would ask 'the public' to say if as a general rule our 'judges' are the right men in the right place? My answer is, no. And it is really expecting more than human nature is capable of to suppose that they can be. How are they educated to fill such a post? do they lay themselves out to gain such a knowledge on the subject as would warrant them in undertaking to adjudicate? does a mere smattering of Art make them masters of their position, or does it not on the other hand make them all the more dangerous as liable from their much talking to mislead others? Which of us has not come across that *pest* of our profession, the *amateur architect*, the man who considers he *knows* everything and can *do* everything; and therefore when he tries it on, *spoils* everything, such a man is often to be met

on competition committees, and woe to the committee who has such a one for its guide to architectural knowledge. It would be far better for that committee it had never been formed. It contains in itself the elements of all discord and all abuses, for at what will the amateur stop? at nothing, no matter how underhand or discreditable, to carry his point, and show his supposed knowledge; but this, you will say, is after all but natural—granted it is; but is it, therefore, fair play to us? I might go on and further pull to pieces and show up the composition of our committees of 'judges,' but for my present purpose it is enough that we should agree on the point that they are not as they should be, therefore be it our duty to aid them, and if they do not avail themselves of our advice, *they* are to blame. I now come to competitors, and under that head we all, in a very great measure, stand. Gentlemen, I must be fair and I must be candid, and in answer to the question, How do competitors come out of competitions? I reply, not always with clean hands. Now I can imagine indignant 'judges' throwing the taunt back in our teeth and saying, "Physician heal thyself." Well, let us accept it, and be that also a part of our task. In all communities and professions I suppose there will be 'black sheep,' and these we can never hope to cure absolutely, but we may shame them into a change for the better I take it, and that in more ways than one. A friend said to me the other evening, hearing I was about to read this paper, "Competitions, to our profession, meant, 'Who has the most friends?'" This, I am sorry to say, is only too true; which of us has not been told, before sending in competition designs, that we were wasting our time; that so-and-so was too strong for us on that committee; which of us has not known of canvassing for votes among the judges by competitors, and that not always *sub rosa*, but with a sufficient amount of concealment to make it a matter next to *impossible* to bring before this Institute? To go further; which of us has not heard and read of even graver charges made against members of our profession? of base and low tricking being resorted to for the purpose of ensuring success? Gentlemen, this disgraceful system of favoritism and incompetency on the part of our judges, and of dodging on the part of our competitors, must have, in combination with the utter want of knowledge of their duties on the part of both judges and competitors, a damaging effect on competitions, and a demoralizing and degrading effect on the tone of the profession, and on the mind of the public.

This is but a faint outline of some of the evils of the system of present-day competitions; and with these remarks I close competitions as they are, and proceed to what they should be; though under this division I will also treat of many existing evils, but more especially in regard to their cure. First, come in all their majesty our 'judges,' and under this head an inherent difficulty presents itself in their selection, for, although our judges may be persons of unimpeachable integrity, they are rarely, if ever, chosen as men competent from having had their attention previously directed to the acquirements of the necessary knowledge which would enable them rightly to adjudicate on, much less to understand, the points and beauties of the plans submitted to them; indeed, in most cases our 'judges' are at sea from the very beginning, and, therefore, not knowing what they want, how can they attempt to decide, or say which plan is what is wanted, or which the best. To meet this difficulty I would propose that, in each competition our 'judges' should avail themselves of the services of an architect, who would be neutral in the competition, and whose duties would be, first of all, to put in order what is required by our 'judges,' so as to be clearly understood by those about to compete; and then, when the plans are submitted, carefully to go over, and lead them with him, and explain to the committee, the "ins and outs" of the various plans. As I take it, it is quite impossible for any one, without a very large amount of experience, to read a plan, or to follow out arrangements and economy of space, combined with convenience, beauty, suitability, and stability. In the foregoing passage I have spoken altogether of "*plans*," and I feel very confident that if in competition *plans* were all that were sought for in the first instance, the arrangements would work much more satisfactory than at first glance it may appear, as I think we may take it for granted that the man who can make a good plan can make a good elevation; but, even supposing such was not the case, and that it did not follow, then let there be either a second competition for an elevation to the accepted plan, or let the consulting architect be employed to carry out the work. The adoption of the above suggestion would quite upset that abominable and unfair system of choosing a design in consequence of its elevation being pretty or of a particular style, which, when it is about to be carried into execution, from its excessive cost, has to be stripped of every thing which in the first place recommended it, and on the completion of the work it stands a disgrace to all concerned, and a monument of a flagrant injustice to other competitors, who honestly "cut their coats according to their cloth." Our 'judges' should further remember that the agreement by architects to compete on the *certain terms* laid down if acted up to by the architects becomes a *mutual*

* Paper read at the Royal Institute of the Architects of Ireland, on the 19th April, 1866, by Mr. John Lanyon, Fellow.

contract, which is *morally*, and I even believe, *legally* binding on our 'judges'; and I would go so far as to say that in not carrying out the terms of their agreement to the letter our 'judges' in many cases leave themselves open to actions at law. As an institute I think we should be very glad to give assistance to wronged competitors in some of the very glaring cases of dishonesty and jobbing that unfortunately do occur. Our 'judges' once made answerable, such a case would have a more wholesome effect in checking the evil than any other remedy. Strong measures are necessary to eradicate deep evils. In a former passage I recommended that the services of an architect should be had in all cases, but I also think it would be most desirable in cases when other professional knowledge would be of use, that the services of members of other professions should also be called into requisition, and for this purpose—that the instructions as to what is required should be as clear and concise as possible, but at the same time in no way confining or restricting architects to any particular arrangement, except where the same is *necessary*; and then it cannot be too distinctly stated; if rooms of a certain shape or size are desirable or necessary, this should be specified; as also if there be a preference for, or a leaning to, any particular style. We all know that in many cases our 'judges' confess their inability, and are very glad of any suggestions that may be made to aid them in their (at all times if fairly and honestly carried out) most arduous task; who are, therefore, so fit to make these suggestions as the members of our profession, or who have a better right or should more thoroughly understand the subject? Therefore as I feel it is just as much for the interests of the interests of the public and the profession, I submit for your consideration whether it is not most desirable that we should now take some steps for the better regulation of competitions; and, as a stepping-stone in the right direction I shall submit to this meeting a few heads to be discussed, that, when whipped into shape and worked out in detail, may form a basis for future competitions. Before doing so, however, and leaving our 'judges,' I will give them a hint, by the way, that, although they cannot pre-empt all the designs submitted, good manners might suggest to them sometimes the propriety of at least *thanking* the unsuccessful competitors for their trouble, expense, and loss of time.

1. Inasmuch as it is absurd of our 'judges' to state the amount of accommodation required, and then to say it must be done for such a sum—in other words, insisting upon having a quart and paying for a pint—it is desirable, if they specify the accommodation, they should give only an approximate idea of the cost, to be kept in view as much as possible by the competitors; otherwise, if they give the exact amount of outlay, it is desirable that the required accommodation should be only approximately stated.

2. In cases where the outlay is distinctly stated, inasmuch as it is most difficult to come to a true decision as to the cost of the proposed building, an approximate estimate on some general system is desirable. I would, therefore, suggest that our 'judges,' with professional assistance, should find out a fair average price per cube foot for executing works in the locality of the proposed building; that a margin of 10 per cent. should be allowed to cover difference in ornament, &c., and that one of the first steps taken by the committee, through their professional adviser or surveyor, should be to cube the various buildings, and set aside at once any that came above the mark.

3. That, inasmuch as the present ratio of premiums is not a sufficient or a fair remuneration, and therefore cannot command the attention of first-class men, premiums should bear a direct ratio to the value of the work, and be at $1\frac{1}{4}$ per cent.

4. That, inasmuch as 5 per cent. is not a sufficient remuneration in cases where the architect has been successful in competition, the full amount of the premium that he may be entitled to should be paid in addition to the usual fees (applause).

Mr. W. J. Welland, Fellow.—Referring to the frequent breaches of faith arising from the non-compliance with the conditions laid down in competitions, it appears to me that we shall never get the public to believe that we are in earnest in our effort to induce them fairly to abide by the rules, until they see us seriously and honestly engaged in reforming our own conduct in reference to the same matter. When an architect sends in drawings for a competition he, by that act, signifies his acceptance of the prescribed conditions; if, for instance, one of these be that the premiated design is to become the property of the committee, and that the prize is to be £50, every architect sending in drawings thereby agrees that they shall belong to the committee if he be awarded the first place and gets the premium of £50, and in like manner he accepts the other conditions, as to the cost of the execution of his design, the accommodation to be afforded, and so forth. If he then, by his professed acquiescence in these conditions, obtains the opportunity of having his drawings (which in reality violate them) examined and considered by the judges, he commits, in my opinion, a very dishonorable act, and

when in addition to the abstract question of the morality or immorality of the matter it is borne in mind that through these false pretences he is seeking an opportunity of wresting the prize from his more honest professional brother, and thus taking the bread out of his mouth, his conduct assumes a very grave aspect indeed. He does a double wrong; he first gains admission to the lists, by pretending to conform to rules which in reality he is not abiding by, and then, when the contest begins, he seeks to overcome his opponents by the use of weapons which are prohibited by the laws of the tourney, and with which they are unprovided. We are too fond, as it seems to me, of abusing the public and sermonising our judges, while we have not a word of blame for the architect who has equally broken faith, and indeed he is more blameworthy than the judges, in the same degree as the tempter to wrong is worse than he who yields to the temptation laid before him. Let our institutes and associations exert themselves in regulating the conduct of their members, and the public will be found ready to believe that we are in earnest in the advice which we are so ready to offer for the guidance of the judges. Let us take the beam out of our own eye before we set about extracting the mote from our brethren's.

Mr. J. H. Owen, Fellow, Hon. Sec., observed that a fact of primary importance was that competition had the one great advantage of bringing to light latent talent, which under other conditions might never have been developed. In nine cases out of ten competition committees required, as Mr. Lanyon expressed it, a quart for the price of a pint. In most cases judges had no idea of what they wanted. They, for the most part, judged as ladies do, by the 'prettiness' of the thing as it was cunningly placed before them. The use of color should be strictly prohibited in all competition, so as to place all competitors on equal terms, and to obviate the gross and glaring deception which was practised on judges, and was a source of great damage to real beauty and progress of design. On another point he felt strongly. The mode by which a committee sought to obtain designs—plans and specification—at the cost of a small premium, and then carry the building out with the aid of another architect, as a shabby device for saving a paltry sum of money, should be most strongly discountenanced. His attention had been especially directed to this point from a letter which appeared in a recent number of the DUBLIN BUILDER, which he had before him, exposing an instance of this abuse (Waterside Meeting-house). Incidentally, he might add that the same number contained some judicious remarks (he presumed by the Editor) on a recent well-known competition case—the O'Connell Monument one. He thought that the DUBLIN BUILDER deserved well of the profession and this Institute, for its care of their interests, and for the ability with which they were uniformly advocated. So valuable an ally deserved from them their very best support (applause).

Mr. Thomas Drew, Fellow.—I think, Mr. Chairman, attention should be strongly drawn to one fact connected with competitions. Mr. Lanyon, in his excellent and suggestive paper, has touched on a higher scale of premiums. We must be prepared when we enunciate this to be asked by the public and committees why they should increase the scale of premiums, where for the present paltry ones which they offer they can obtain any amount of the best talent available. My answer is that they do not do so. The present uncertainty of conditions and decision and paltriness of the premiums, produce exactly their relative value in architectural design. Few of our recent competitions, although the daily papers may call them "highly creditable to the state of progress of architecture in this country," are anything of the kind. I have not seen *any* competition lately which is either creditable to us, or represents our position in architectural progress; I have seen a good many which are a downright disgrace to us, and, as an instance, I do not hesitate to quote the recent O'Connell Monument competition—taking it on the whole—as one of these. Mr. Lanyon's suggestion as to a preliminary competition for the *plan* appears to be a valuable and practical one. Committees, as a rule, only know *after* the competition what their requirements as to accommodation are, and it is rather an extravagant and costly process to teach them this by a competition as ordinarily conducted. With respect to the suggestion as to ascertaining a fair price per foot cube to be applied as a test, I do not think it a practicable one as put by Mr. Lanyon (hear, hear). Great difference of opinion must exist as to what is a fair price in any given locality, but at the same time a committee might well with advantage state in their conditions that they would apply to all the designs a certain price—it might be a penny, or it might be a shilling—per foot cube as a *basis of comparison*. This might be supplemented in all extraordinary cases by the report of their professional advisers who would direct their attention to any exceptional features in each design tending to make more costly or cheaper than its rivals. Instances have occurred in my memory where honest designs that would cube at sixpence, have been thrown overboard for more showy ones on the

bare assertion of opinion of the authors of the latter that in their opinion twopence halfpenny or threepence was an ample price for the same class of work. Mr. Drew concluded by expressing his hope that this subject would not be allowed to drop until some practical steps had been taken, and directed attention to the document prepared by the Architectural Alliance, and forwarded to all committees. It contained excellent suggestions, which however he thought might be improved on.

It was to be regretted that so lax a tone of morality on this subject had crept insensibly into the profession and internal reform was what was most urgently called for.

Mr. J. Rawson Carroll, Fellow.—There are two sides to this question; one from the architects' point of view, the other from that of the public; this latter is not as often considered as the former, but it is equally important. I think we need not be surprised at sharp practice on the part of the public; they very naturally say, these architects seem to regard fair play so little in their dealings with each other that it behoves us to be very sharp in our dealings with them. And are they not right in their conclusions as to the conduct of the architects? Do we not see daily the most unfair—I might say downright immoral—conduct on the part of even the men who are in the highest walks of the art? Is not a recent instance fresh in our recollection where an architect of high position,

who was competing for one of our cathedrals, not content with resting his chance of success on merit (though he had that in a high degree), not even depending on the interest he had with the committee, not content with all the advantages which could be derived from the present, no, he must call in the aid of posterity to help him, and "leave to the piety of future generations" the erection of the spires and towers, which mainly contributed to give his design superiority over others. It would, perhaps, be invidious to quote other instances of bad faith on the part of architects. We are not true to each other. Men who are high up in our ranks ought to set an example to those below; and surely they, above all others, do not require to descend to such "trade tricks;" their genius, their name, their influence, ought surely to give them advantage enough; and I say that so long as we are not true to ourselves, and the position which professors of our noble art ought to maintain in the eyes of the public, so long will the public fail to see that we deserve any better treatment at their hands.

A resolution was then passed, requesting the Council to consider the propriety of the Institute joining the Architectural Alliance; and also to take into consideration the opinions expressed by the different speakers, with a view to taking some definite action in the matter of competitions.

The meeting then adjourned.

FINANCE AND PANIC.

THE past winter, while it has been unprecedentedly mild, has not been, the gardeners tell us, favourable to vegetation. Never, they say, have they lost so many flowers. Frost, their natural foe at the season, they have means to resist; but against the more insidious evil of damp they have had no power to guard, and thus the lovely show of varied blooms with which our suburban nurseries have welcomed Easter have been diminished by an uncounted number of "damped" plants.

There are plants of another growth, not raised, indeed, under glass, for sunlight is not their element, but which may properly be said to have been forced, to which the winter has been even more unkind. Those rapid, unnatural, and unhealthy growths, ill-managed and speculative trading companies, have suffered far more damage than the tenderest green-leaved plants; and, as it is not so easy to ascertain the actual state of health of one of these artificial organizations as it is to observe how leaf and bud and blossom shrivel and fade, or swell and push and flourish, so is the panic that has followed one or two cases of destruction wide and disastrous.

That such misfortunes, to call them by a polite name, would occur, was plain to every man of consideration when the old law of partnership was altered. That law, like very much of our statute and even of our common law, was attended with serious disadvantages; but it was clear, intelligible, tolerably well understood, and the habits of the people had been formed in accordance with its very stringent provisions. It cannot be said that it was just. It was one of those laws which no legislature for an ideal state or improviser of a code would have proposed. It is possible that the good and evil which it effected fairly weighed against one another, it was desirable that it should be altered; but it was certain that such an alteration would be attended with a crop of misadventures before the public mind became accustomed to the new order of things. And so it has proved and is proving.

It cannot be doubted that the principle of association is one of the earliest, and one of the most fertile that are developed by civilization. It is a great social principle; nor can it be considered to be peculiar to civilised men, or indeed to mankind at all, for we find its most regular and most faultless operation in the divinely instructed politics of the bee and of the ant. But it has its function and its limit, and can no more be trifled with with impunity than it can safely be left out of sight. It is by associating their wealth, their skill, their science, that men have made the great physical and intellectual, or rather scientific, progress that was prophesied or dreamed of by Bacon. But for association to be successful, it is obvious not only that it must be well directed and well conducted, but that the contributions as well as the contributors shall be of real and actual value. An association of needy men does not constitute a great capitalist.

That word "capitalist" is one that, if words had to give account of their actions, would have much to answer for. It is one of those few half-understood expressions, by the use of which a subject that should be dealt with by common sense is set apart as forming a pseudo-science. As to their own immediate personal money matters, most men, indeed, admit the guidance of ordinary prudence. But let a question arise ever so little beyond the limits of personal experience, and the wise maxims

that unconsciously regulate the transactions of daily life are too often forgotten, and men eagerly listen either to the groundless hopes, or the equally groundless fears of their most casual acquaintance, and seek the advice of others no better fitted than themselves to advise as to questions that only require clear, plain, and honest statement to solve themselves.

Nothing can be more simple than the facts which form the basis of associations for purposes of business. When the object to be attained is of such magnitude as to exceed the means of individuals to carry out, it can only be attained by the combination of the resources of several, or of many individuals. Railways, for example, requiring the outlay of millions of money, in obtaining Acts of Parliament, purchase of land, and construction of works, before any return can be earned, can only be made by the Government of the country, which commands large resources, or by the association of shareholders, as in this country. But while it is necessary, in order to collect the large sums of money which must be expended before any earnings come in, to resort to combination of resources, it is well known that the application of these resources will be less carefully and less skilfully directed than in the case of individual enterprise. If two railways, of equal length and under similar circumstances, were constructed, one by a large company and the other by a single individual, no one can doubt that the latter would be much more economically completed than the former. According to experience and according to human nature, a man looks after the expenditure of his own money in his own enterprise far more keenly than he would do if he were merely the officer of an association dealing with the funds of the association. While, therefore, for purposes of such magnitude as to render association necessary, the company, if honestly and ably administered, may amply succeed; if the limits of the enterprise be so far reduced as to allow individual enterprise to compete with associated enterprise, the former will, in all probability, carry the day. The great company may have actually wasted a quarter of its funds; but its work is done, and whether it be the shareholders or the public that suffer (which will depend on the possibility of competition on the part of other great companies), the enterprise goes on. But in a small company such a waste of resources would at once put the association at a corresponding disadvantage as regarded individual competition, and the destruction of the company, or at least, great loss to the shareholders, would be the certain result.

It is for these plain and simple reasons, stated, perhaps, with some circumlocution in order to avoid any of the words invented or claimed by the lecturers on political economy, that the change of the law as to liabilities of partners, and the rapid rise of a large crop of limited companies, was certain to produce a considerable amount of disaster. It is true that other causes have combined to render the pressure now felt more severe. The great influx of Californian and Australian gold, which has rendered that metal more plentiful, and has, therefore, raised the price of all other articles, as measured in gold, has caused a disturbance which it is difficult accurately to measure; although if we regard it as indicated, either by the price of diamonds and precious stones, the price of meat and cattle, or the prices paid for journeymen's labour, we shall have reason to conclude that a fall in the value of gold to the extent of twenty per cent. has taken or is taking

place by a gradual process that is not very severely felt, except by persons of fixed incomes. The great disturbance to our manufactures caused by the American war, the large exports of goods to America since its close, and the extremely unsettled state of all financial transactions in or with the Transatlantic republic, is a second element of troubles in the commercial world. And the imminence of a great European war, a war of which, condemned though it be alike by wisdom and by justice, every day brings some fresh menace, depresses the price of all public securities, and increases the general feeling of vague uncertainty to which home politics add their share.

In a social atmosphere thus menaced with storm from so many points of the horizon, the exposure of the manner in which some companies have been concocted, and in which others have been carried on, has probably been the exciting cause of a panic which, if unreasoning, as panic always is, has not been altogether unfounded. To the man who, having money to invest, brings to bear on the question of how best to lay by his earnings in a safe and reproductive form, the same patient thought and practical sagacity that have enabled him to accumulate them, we can only say, wait the turn of the tide, the panic cannot hurt you. A *bonâ fide* investment is not affected by fluctuations in the market price, unless you are forced to sell—that is to say, in nine cases out of ten, unless you have endeavoured to invest money that you had not earned. But with the speculator the case is different. The man who incurs liability by the purchase of shares in an undertaking which he himself is incompetent to conduct, and of the conducting of which he is unable to form a sound opinion; who has perhaps been tempted to buy by the very premium at which he purchased the shares, or by the promise of dividends to be earned by his company such as no individual competitor in the business ever drew from his best personal exertions—this man we can only recommend to take comfort in the fact that his subscription is now limited in amount, and that in losing his money to that extent, he has purchased a very valuable lesson as to the disposal of his future earnings.—*Builder*.

At a meeting of the Council of the Royal Dublin Society, held on Wednesday, 18th ult., the Rt. Hon. Lord Clonbrock in the chair, a report was read from the Finance Committee, setting forth the present state of the society's finances, and allocating the sums to the several departments for the current year. The report was highly satisfactory, although based upon a lower amount of subscriptions than the average received for the last six years. After allocating a sum of £470, to meet sundry expenses connected with the library and school of art, as well as to provide prizes, furniture, incidentals, &c., the council were enabled to make a present allocation for £560 for the agricultural department, which included a sum of £250, in aid of the agricultural shows. This latter sum, it is gratifying to find, is in excess of that heretofore voted by Parliament, which amounted to but £187. The difference between the sum granted for the purposes of the shows, and that altogether voted for agricultural purposes, will be devoted to the support of the agricultural museum and laboratory. It is to be observed that as the funds of the society are increased by the addition of members, so will it be enabled to support the several departments of the society before enumerated, including that of agriculture upon a more liberal scale.

THE STATISTICAL SOCIETY.

THE fifth evening meeting of the Statistical Society for the present session was held on the 25th ult., at 35, Molesworth street,

JAMES HAUGHTON, Esq., V.P., in the chair.

Mr. J. J. Murphy, of Belfast, read a paper on "The Railway Question." He commenced by remarking that the dislike to Government intervention in matters that affected society was becoming daily less. The Post-office system afforded a great illustration of the usefulness of such intervention. All the railways constructed since the Act of 1844 were subject to the provisions of that Act, which were to the effect that at the expiration of 21 years from the construction of any railway the Government might purchase it up at 20 years' purchase upon the annual value of the dividends, taking the average of the last three years. There could be no doubt that if the Government were now to act upon these powers the result would be very beneficial to the country. Where from distress, which he hoped was temporary, as was the case with several railways at present, the average amount of the dividends for the past three years was less than the actual value ought to be, that would not be a fair criterion. The actual value of the railways he believed to be 25 years' purchase of the annual profits. In his opinion the rates of carriage ought to be lowered to a halfpenny per mile for goods, and a farthing per mile for third-class passengers, with a proportionate reduction for the other classes. The total capital of Irish railways, was little short of £24,000,000, and the earnings of those lines during that year amounted to £810,000, being at the rate of a small fraction under 3½ per cent. of that capital. Twenty-five years' purchase of the annual profits being assumed to be the actual value of the railways, would, upon this sum, amount to £21,000,000, for which the State could become the absolute owners of the Irish railways. But it would not be necessary to take up all the railways of Ireland at once. They might be purchased gradually, one by one. He thought it would be most inadvisable to intrust a department of the Government with the duty of working the railways. Government should only supervise the working, fix the fares, and arrange, or at least approve, the time-table. All the railways should be leased then by Government for twenty-one years, and it would be most desirable that they should be leased together, or at least in four great groups, corresponding with the divisions of the country; but it would be necessary for the lessees to give security for keeping the lines in proper repair. That such an understanding as the working of the lines was by no means impracticable was proved by the fact that at present there were in England 1,200 miles of railway managed by one company alone, the London and North-Western, and bringing in a larger revenue than the 2,800 miles of railway in Ireland all put together. The construction of any new lines of railway ought to be left to private enterprise, and Government ought to pledge themselves not to oppose any bill for a line on the ground of its being a competing line. If at the end of the twenty-one years' lease the working of the Irish railways under the new system showed a loss, the loss should be made good out of the county rate or income tax.

Mr. W. J. Hancock then read a paper for his brother, Dr. Hancock, "On Railways in Ireland." He showed that at present there were in Ireland three railways bankrupt, or winding up; two at a standstill; ten paying no dividend on the ordinary shares; six paying no dividend on the preference stock; seven, the dividends of which were less than those paid on the Government Funds; six paying dividends at a rate less than that of commercial interest; and but one, the dividend of which was above par. He thought that where lines had become bankrupt, or where works were stopped, Parliament should not give them extension of time, or try to have them worked on the commercial principle, as he did not think they would succeed on that principle. He thought that these lines should be examined, and if their traffic would pay for the cost of completing them, supposing the money to be advanced at 3½ per cent., then the Government might safely complete those lines. If the traffic would not pay for the cost of completing them at 3½ per cent., then, if the localities took such an interest in the matter as that they would guarantee any portion of the cost of either keeping the railways in repair, or of making them so, so as to reduce it to a profitable speculation for the Government to advance money at 3½ per cent., then he thought they might be completed and become public property; and so far as money already advanced was concerned, he would have the lines worked for about seven years, and if they realized any profit beyond what would pay the Government 3½ per cent. on what they advanced on them, he would give the value of that excess as compensation to the existing owners. He would have the Government take possession of lines either bankrupt or where the works were not proceeding, only on the principle of the general taxes not losing. It was

not a question of transference of burden, but simply a question of management. With regard to lines which only paid dividends to preference shareholders, he thought as the limit of twenty-one years fixed by the Act of 1844 runs out, the Government should take the lines. The traffic should be valued and the lines purchased by the Government at 3½ per cent., and he would do the same with those lines which paid no dividend to their ordinary shareholders. With respect to lines which paid less than the rate of interest on the Funds, he would not interfere with them unless the companies were anxious to sell. With respect to those lines which paid more than the interest on the Funds, they were, of course, not wholly unsuccessful as commercial speculations, and there would be no occasion, till the experiment of a Government management failed, to interfere with them at all. He thought the Government ought to take contracts for keeping the lines in repair, but the receipts should go to the Government altogether, just as in the case of the Post Office. He thought that all the lines that it would be really profitable to make on the commercial system in Ireland had been made, and that new lines should only be made like country roads—namely, that the locality anxious to have them should offer to contribute a certain part of the expense, or whatever would make them profitable; and if the locality guaranteed that, the Government should advance the money, and the railway should become public property.

Mr. W. Daly thought that, even before any intervention of Government, the railways might be made to pay better than at present.

Mr. M'Curdy Greer said he was rather inclined to agree with Mr. Murphy than with Mr. Hancock with respect to whether the Government should take in all the railways, or only those which were decidedly losing speculations. The Government, by taking the railways generally, would have a surplus of £300,000 or £400,000 to begin with, and that might be applied in the reduction of fares, which reduction could be afterwards extended as the increased revenue rendered it possible.

After some discussion on the part of the members,

The Chairman said he should like to see the Government take the matter in hands, but he did not believe that the results would be so very beneficial as some gentlemen conceived.

Mr. Hancock observed that Mr. Greer seemed to mistake Dr. Hancock's views as to the purchasing of railways. He did not mean that the purchasing up should be confined to those badly circumstanced.

NEW DOMINICAN CHURCH, TRALEE.

THE illustration is a view of the exterior of the new Dominican Church, of which an interior has appeared in a previous number (150).

The design will be observed to have some novelty and boldness, especially in the composition of the tower and spire; much thoughtful care is evinced in all the details.

This church may be taken as a fair average specimen of a number of Roman Catholic churches, varying in cost from £4,000 to £6,000, erected, or being erected, in different parts of the country.

TIMBER IN CANADA.

THE principal description of timber found in the forests of Canada are:—White, yellow, and red pine; white and black spruce, tamarac; white, rim and black ash; grey, reil, soft and rock elm; bird's eye, white and red oak; bird's eye, curly and soft maple; black and grey walnut; smooth and rough bark hickory; ironwood; red wild cherry; basswood; beech; red and white cedar; hemlock; fir; poplar; chestnut; buttonwood, and whitewood.

For furniture and ornamental purposes, the luxurious beauties of our crotched, wavy and mottled black walnut are well known both here and in Europe; also the beauties of our bird's eye and curly maples, as well as our curly birch, crotched white oak, and red wild cherry. The superior qualities of our white, red and yellow pine are fully acknowledged in the markets of Europe. Our oaks, elms, and tamarac rank high for ship-building and general purposes; in fact, all our woods are susceptible of being utilized in the arts and manufactures.

The industry to which the manufacture of the different products of the forest give rise is very extensive. In 1851 there were 1,567 saw mills in Upper Canada, and 1,065 in Lower Canada. The number of feet manufactured during the year amounted to 391,051,820 and 381,560,950 respectively. Since 1851 the quantity manufactured has no doubt increased enormously, but no data are at present published from which satisfactory conclusions can be drawn, although some conception of

the magnitude of the trade may be formed from the fact that planks and boards to the value of 1,507,546 dols. were exported to the United States in 1861, being not far from half the total production of Upper Canada ten years previously; although the trade had suffered to a remarkable extent, in consequence of the calamitous civil war which has wasted the energy of our brethren across the international boundary.

The produce of the forest of most importance next to lumber has always been pot and pearl ashes.

Canada exports annually about 30,000,000 cubic feet of timber in the rough state, and about 400,000,000 feet, board measure, of sawed timber.

THE O'CONNELL MONUMENT COMMITTEE.

SINCE our issue of the 15th ult. this body held two meetings, but with what result as to a definite and final settlement of this long-debated matter, must be judged from the reports of proceedings given below. The meeting on the 19th ult. was well attended, it being anticipated, as announced, that a ballot would take place for an architect "to furnish a complete design for the monument, and afterwards to superintend the erection of its architectural portion." No ballot, however, took place; the majority of those present, after nearly three hours' deliberation, retired with the prospect in store of another happy meeting on that day week.

Thursday, 19th ult.

A letter from the stone-cutters of Dalkey was read, enclosing £1 as their subscription.

The Rev. Mr. O'Hanlon read the report of the sub-committee appointed at a former meeting. It was now for the committee to deal with the report as they thought best.

Mr. Devitt said he would be very glad to hear some reasons why the report should be adopted.

Mr. Fraser said he was under the necessity of opposing the adoption of the report. The report before them was the report of three gentlemen, and no one was to be entitled to vote (it appeared from the language used) except those who happened to be present at a particular Thursday's meeting. He objected also to a previous report upon which the present one was founded. He was one of those who did not approve of having an architectural structure with a figure of O'Connell on the top. Sculptural groups should, in his opinion, predominate. It was represented in the first report that the committee had decided that the monument should be more architectural than sculptural, but he never knew of anything of the kind having been decided by that committee.

Mr. Keegan said the sub-committee told Mr. Foley that the monument should be architectural and sculptural, and Mr. Foley advised that a design should be got from an architect, and he reserved to himself the right to execute the statue.

Mr. Fraser said that if Mr. Foley did not approve of the design they would not have his services on the statue.

Mr. O'Brien said that if Mr. Foley did not undertake the statue they could get some one else.

Mr. Whelan, T.C., said they did not want Mr. Foley. It would be degrading to wait any further upon him.

Mr. Delaney observed that if it was meant to give the whole work to Mr. Foley without condition he would vote against the amendment. It was absolutely indispensable to have an architect's design for the whole monument.

Mr. Devitt was not in favor of either the report or the amendment before them. He was in favor of the arrangement proposed in the original report of the committee being carried out. He was at a loss when he came into the room to understand the cause of the crowded meeting; but when he heard the cheer for the idea that Mr. Foley should be got rid of come from a certain group, he learned the reason why so many had assembled on that occasion. The Dublin tradesmen had done much in this matter; but their subscriptions were as nothing compared with the whole fund. This question should not be decided upon a mere Dublin view. It was the wish and resolve of the country that the work of the O'Connell Monument should be given to the best man who could be found. Foley was an Irishman, and an honor to his country; he was not succeeding in Dublin, he went to London, and his magnificent genius raised him to the head of his profession; and he was to be condemned for that by an Irish assembly? Certainly not. Foley had a reputation that he valued more than any money they could give him, and therefore he would not have anything to say to a design that would mar the effect of his work. But they had most eminent architects in Ireland, and he was convinced they would succeed in producing a design of



Pugin & Ashlin Architects

E. Heyes Del & Litho

NEW DOMINICAN CHURCH GRACE

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which Foley would approve, and that they were eminent enough to meet, as far as they could, the opinions of Foley as to details. Some of their ablest architects were omitted from the list given in the report, and this was an injustice to men who had produced some of the best structures in the city. He thought the report before them was objectionable in many respects.

Mr. M. A. Hayes said he, like Mr. Devitt, could not support either the report or the amendment. He saw Mr. Foley when he was here last, and Mr. Foley was most anxious that Irish artists should not be excluded, but there should be uniformity. He also said there should be an architectural design, and be (Mr. Hayes) thought the committee should be most careful as to getting the design. He advocated getting designs from a number of architects.

The Very Rev. Canon Farrell suggested that they should get sketches from some half dozen of the most eminent architects, and pay for those sketches, so as to make them the property of the committee.

On the proposition of adding three or four names to those of the architects named in report of sub-committee a longhanded discussion took place, after which an adjournment took place until

Thursday, the 26th.

There was a large attendance on this day also. Letters were read from the Lord Chancellor, and Catterson Smith, Esq., declining to give any further opinion on the first set of designs sent in, and which, as well as the second, were rejected by the award committee of which they were members.

Mr. Keegan said that the resolution, which he proposed at last meeting for the award of the prizes was not affected by any members of the committee of award declining to act.

Mr. Angelo Hayes said that one of the members of the committee of award was dead, and another had gone to India. He submitted that, as they had not these two gentlemen, and as the other members of the award committee had not the plans now before them, they could not make their award, and be believed that even if an award were made by them, it would still give great dissatisfaction.

Mr. O'Brien stated that Judge Berwick said he was anxious that the prizes should be awarded.

Mr. Keegan was sorry to find that an attempt was being made by a side wind to defeat his resolution of the previous meeting, he would move that the sub-committee be empowered to award the prizes.

The Very Rev. Canon Farrell said that that could not be done, as all the models which had been sent in were sent back or destroyed, and the committee of award would have nothing to act on.

Mr. Whelan, T.C., said that none of the designs which had been sent in were fit to be adopted. He admitted that Mr. Foley was a distinguished artist, but urged that he was not superior to the artist who erected the Boyd statue, to whom he wished the order should be given for the execution of the principal figure of the O'Connell Monument.

The Rev. Mr. O'Hanlon thought that they should now ballot for an architect.

The Rev. T. O'Sullivan asked the chairman whether they were bound by accepting the report adopted at their last meeting to take immediate action on it?

The Chairman said he thought not, and when they considered the serious nature of the duty they had before them, they ought not to be in the least hurry. As to the selection of an architect by ballot, it was wholly against his mind, because they might draw a most incompetent man. He thought he should be allowed the exercise of his own judgment in the selection of a man who was to build a great monument like that to O'Connell.

Mr. Delany suggested that they should pass a resolution which would save the committee from being bound to the design of any architect whom they should select, because he believed that the report which had been already adopted did bind them that way.

Mr. Reilly moved that Messrs. Pugin and Ashlin, Calbeck, Haigh, Butler, MacCarthy, Burke, Geoghegan, Mulvany and Peter Madden, should be the architects to be called on for designs for the O'Connell Monument.

The Chairman asked Mr. Reilly whether he intended that the Committee should be bound to give the execution of the work to the person whose plan was selected.

Mr. Reilly said he did not, unless the report bound the committee.

The Rev. John O'Hanlon said that it was to be perfectly understood that the Committee were not to be bound to the architect.

The Chairman said that the report would bind them neck and heels to the architect. He suggested to Mr. Reilly that he should add to his resolution, that it should be specially understood that the committee would not be bound to employ the person who might have the greatest number of votes.

Mr. Dwyer urged that there was a compact or honourable understanding with Mr. Foley, that that gentleman should get the order for the execution of the monument.

Mr. Hayes moved that the following words be added to Mr. Reilly's resolution:—"That the designs furnished by the several architects shall be balloted for by the committee, and that each of those architects named shall receive £20 for his design, and that if any other designs be sent in they shall also be balloted for, but not paid for." His object, he said, in moving that amendment was that no architect should be excluded from the competition.

The Very Rev. Dr. Spratt seconded the amendment.

The Chairman said that there was no proposal that the candidates should be paid.

The Rev. John O'Hanlon opposed the amendment. He was altogether opposed to expending £160 or £200 in the way proposed.

Mr. Hayes said he only proposed it with a view to its unanimous adoption. As he found that there were objections to it he would withdraw it.

After some discussion, Dr. Spratt suggested that they should ballot for three out of the eight architects named, and that those three should get £20 each for their designs.

Mr. Reilly adopted the suggestion, and moved it in the shape of a resolution, which was then put and carried unanimously.

The resolution previously proposed by Mr. Reilly was also put and carried.

Several members urged that the ballot should be taken at once. Others were for a postponement to next meeting. Ultimately the committee resolved to adjourn the matter to their next meeting.

SHAM AND REAL FIREPROOF BUILDINGS.

THE annual British wreck chart is an amazing document in proof of the vast loss of the products of human industry (omitting all thought of life itself); but were there a corresponding British conflagration chart, we imagine fire would put to shame its watery rival, rich in destruction though it be:—

"As is the ounce and bottom of the deep
In countless wreck and sunless treasuries."

In London alone millions' worth is yearly burnt, and in a few months forgotten. The traces of the great fire of two or three years since of the wharves and warehouses just below London Bridge have scarcely been effaced by new buildings, quite as combustible as they were before, when a new disaster of the same sort, and on a commensurate scale, has occurred at the opposite side of the river. Between the date of the former and of this last fire at St. Katherine's Docks a sum which would form an absorbing fraction of the whole cost of the London and Birmingham Railway has been annihilated by fire. Yet these are but solitary examples. Is their recurrence necessary? Is it an inevitable result that, in spite of all our structural improvements, it is of the very nature of those vast receptacles wherein we pile up in store the wealth that passes to us from all the world, that they must be burnt? Is it that, like Turks at Constantinople, we faithfully let the will of Allah be done in building stores, offices, manufactories, houses, all nearly as combustible as if of wood wholly; or is it, as some practical men, who profess to "speak with authority, and not as the scribes," assert, that to construct a fireproof building is a physical impossibility?

We believe in no such possibility. After a good deal of experience in the actual design and construction of so-called fireproof buildings on various different known plans and from considerations based upon exact knowledge, and the observation of the ways in which such buildings generally fail to fulfil their own title in the hour of trial, we venture to affirm that it is perfectly within the range of science and of acknowledged methods, to construct not a sham, but a really fireproof building of any magnitude—one that shall truly and completely answer, when tested, those requirements which we hold go to the only true definition of a fireproof building—namely, *a building in which the combustible contents may be burnt out in its interior, like fuel in a furnace, and yet that the building itself shall remain as uninjured afterwards as the furnace, after having been lighted and burnt itself out.*

There may be many degrees of approach towards this—from the construction that shall only a little delay the rate of destruction to that which shall preclude it wholly. But whatever is called a *fireproof structure*, and yet stops short of our definition, is in fact a sham.

Even if the building be of materials in themselves wholly incombustible, yet if they be put together in such a way that one of the effects of the conflagration of its contents is to so dislocate and injure the shell of the structure as to make it untenable, then hath it still no just title to be called fireproof.

To one or the other category, however, may be re-

ferred almost every so-called fireproof building in Great Britain—either, parts of the structure itself may be burnt along with its contents, or, by the burning of the latter, the building is shattered; the walls becoming dislocated, cracked, and masses split off by unequal expansion, and losing their connection and stability by the loss of the floors, &c. And this is equally true whether the floors be of timber, or of iron girders and arches, or of concrete *lamina*. In the one case they disappear in smoke and flame; in the other they bend or break, or come thundering down after having pushed themselves out of all hold with the walls.

There is probably not a more magnificent, certainly not a more expensive example in England, of orthodox brick and cast-iron fireproof building, than the warehouse of the Albert Dock, Liverpool, designed and erected by the late Mr. Jesse Hartley, the able dock engineer of that port. Yet there is no hazard in the assertion that, were a rousing conflagration to get established, of the contents of almost any one of their compartments, the whole of the vast pile to which it belonged would come toppling down in mountainous ruin.

Instances of this sort of "grand finale and transformation scene" in iron girder and brick arch fireproof buildings are as common as accidental fires in the district where such construction is frequent. Dozens of examples might be referred to in Manchester alone. One or two more remarkable cases occur to us.

In July, 1853, the large silk manufactory of Mr. J. Davenport at Derby took fire at fifteen minutes past six o'clock in the evening. We quote from the *Times* of the period:—

"All the floors in the mill are *fireproof*, being made of brick and arched over. This fact caused a number of daring men to ascend to the top story of the mill, for the purpose of saving the silk and conducting the water to those parts where the fire had gained the greatest head. The ceiling (i.e., the fireproof arching) being above them, they felt confident of their safety, when, shocking to relate, about seven o'clock (only three-quarters of an hour after the fire had broken out), the roof fell in, and the weight of it falling upon the ceiling (i.e., the first arched floor beneath), caused it to fall into the top room, burying in its ruin all the men."

It is but fair to add, that this floor stood out the shock, and did not go down upon the next below; and so there was a partial salvage of the mill here. But the frequent fate of such buildings has been, that the top or other upper floor in falling carries down the next, and that the others below it in succession, to the ground level. One of the most extraordinary looking scenes of ruin we ever beheld was that of a mill in the north of England, in which the whole structure collapsed thus, and lay a huge rectangular mass, of bricks, shattered girders, and crushed-together machinery, some five-and-twenty feet high by the length and breadth of the mill.

In October, 1854, the tremendous conflagration of the warehouses in the lower parts of Newcastle and Gateshead took place. In this a formidable explosion, produced by red-hot and fused nitrate of soda, sulphur, saltpetre, naphtha, &c., coming all into contact with the water thrown on, took place.

"The fire continued to press towards the river, and now attacked the last warehouse of the block. This was considered to be a 'doubly fireproof' structure. It was lined throughout with iron sheeting, and supported on metal pillars and floors. The brick-work parted from the sheeting, and crumbled away, and nothing remained but the red-hot skeleton of the building." This building in this state—i.e., its lower floor, filled now with "a red-hot fulminating mixture," as the *Northern Examiner*, from which we quote, very aptly terms it—was the focus from which was belched forth, when the water reached it, the volcanic shower of fire, which was carried right across the Tyne, and spread the conflagration to the opposite shore of Gateshead, and the shock of the explosion of which was felt for some miles beyond Newcastle.

We refer to these two cases merely as large examples of what, on various scales, is occurring daily, and in illustration of the fact that, while a building of brick walls, iron and glass windows, brick-arched floors on cast-iron girders (and columns or not), is, so far as its shell is concerned, fireproof in the sense that it cannot be set on fire, either *ab extra* or by ignition of its own contents, yet that it is but a sham, and not fireproof at all, in the case which is almost all-important—viz., in which its combustible contents are themselves set on fire, and are, in mass and in combustibility, sufficient to heat the shell, or even any one floor or large part of a floor, up to the point of dislocation and fall.

The great pile of buildings which have just been burnt at St. Katherine's Docks was, like all at those docks, the design of Thomas Telford.—*Prac. Mec. Jour.*

(To be continued.)

NOTES ON PAINTED DECORATION.*

PART I.—WALLS.

"Cum imagines vel aliarum rerum effigies pertrahuntur in muro siccio, statim aspurgetur aqua, tam diu donec omnino madidus, sit et in eodem humore liniantur omnes colores, qui supponendi sunt, qui omnes calce micceantur et cum ipso muro siccantur ut hæreant."

I HAVE commenced these papers with an extract from the 15th chapter of the 1st Book of Theophilus (*De mixtura vestimentorum in muro*) in order to give as much emphasis as possible to an art process which, although now neglected, was as common and as well known all through the Middle Ages as was the art of building itself. But I have also placed this twelfth century direction for painting a wall at the head of these notes, because from the somewhat loose way in which the word fresco has lately been handled, from the immense amount of fine writing which the subject of coloured decoration has elicited, and I may add from the fashion which some architects are endeavouring to set of leaving the masonry bare on the inside of the walls, there seems to me reason to suspect that those who have written on the subject have done so in a dilettante spirit, without any research worthy of the name, and without any real knowledge of the art; that there is very little true feeling for coloured decoration, and that architecture is even yet far estranged from her sister Painting. That the disciples of the first know little of architecture as a fine art, and the disciples of the last care little for painting as a monumental art.

It will be my endeavour in the following remarks to contribute towards the reconciliation of these practically dis severed arts of architecture and painting. In doing which one of my main objects will be to solicit the attention of my readers to the process described by Theophilus, which has been hitherto known by the term distemper, but which I shall call painting in siccio, as distinguished from and opposed to painting in fresco. The other process, namely, the half-and-half process described by Cennini, the Byzantine fresco of the Monks of Mount Athos, the Greek encaustic, the oil vehicle, the spirit vehicle of Mr. Gambier Parry, and the water-glass process of the Germans, each and all may possibly be used successfully in certain places and under certain conditions; but whilst architects find so much difficulty in getting artists to paint on walls at all, every endeavour should be made not to increase the difficulty by needlessly multiplying the art processes of mural painting.

It is almost unnecessary in a journal like this to point out how architecture, sculpture, and painting in their highest form—viz., as monumental art—must be more or less dependent on one another. In every country and in every age that can be said to have ever had an architecture of its own, these three arts have always acted in concert towards the fulfilment of one great drama; and as the human actor, to carry on the simile, has a tendency to forget the whole in the consideration of his part—often blind to the scene of his fellow-workers in his unhappy and unwholesome anxiety to make himself prominent, at times so much so as to destroy the unity of the scene, and altogether frustrate the author's original intention,—so, too, the drama in which architecture has necessarily taken a leading part has been often marred by similar excesses. The nearest approach to that perfect unity of the arts, which is only to be attained by a perfect tempering of all, and the wisest restraint in each, was that made in Athens during that short period when—to adopt modern titles—the mayoralty of the town was held by Pericles, and the city surveyorship by Tetinus. Unfortunately, however, there are many instances where sculpture, either from its own pride, or mayhap from the inefficiency of its co-partners in art, has taken almost entire possession of the stage, nor need I mention those buildings where painting has abrogated every other art in the vain imagination that her own glory would be greater. Two examples will be sufficient to illustrate my meaning. The west front of Wells Cathedral, which is simply a screen of sculpture, and Giotto's Chapel at Padua, which is a mere exhibition room of paintings; the genius exhibited both by the sculptor and the painter may excuse but does not justify the work. The story of Mr. Tom Taylor's domestic drama, called "Our American Cousin," is by no means a singular one. The piece as originally designed was what Polonius would call the comical pathological, the "Cousin" was the chief character, and my Lord Dundreary was only one of many who formed in the aggregate an English contrast to the American Cousin. Mr. Sothorn was too ambitious for the Haymarket company, and so in a very short time the minor character of Lord Dundreary was made the chief part, and the whole unity of Mr. Taylor's design or work was sacrificed to the extravagant development of the idiosyncracies of one actor, which were never contemplated in the preparation of the design; and as with the actor so it is with the architect, the painter, and the sculptor. The artists of modern times have not sought to correct the er-

roneous tendencies of the sculptor of Wells or those of the painter of the little Paduan Chapel, but have, on the contrary, rather encouraged them and reduced them to a system, in which those three arts hitherto acting together for one common purpose have become dis severed—in which all ties of relationship and all vestige of affinity have been sacrificed to an independency of action which results have proved to be prostration. The Houses of Parliament, some churches, and a few exceptional buildings here and there, are witnesses of a desire amongst some for the old unity. But to secure this unity architects must be content to give up much of what is now known as ornament, and painters and sculptors must learn to be content to work within limits to appreciate the value of the conventional in art, and to know how and when to use it. The architect must be trained more and more in the knowledge of the figure, and composition and colour, or as some people would say, he must pray without ceasing for "these gifts of the good God"—in short, he must be more of a painter and sculptor than he is at present. Whilst, on the other hand, the painter and sculptor must be trained somewhat in the knowledge of architecture, and learn to comprehend and appreciate the plan and purpose of a building, before we can expect them to work together harmoniously.

I propose, then, to consider—1st, the best process for general adoption, in doing which we shall have to inquire into the various processes of mural painting; 2nd, the duty of the architect in relation to the painter; 3rd, the duty of the painter in relation to the architect. Under the first division we shall have to consider all the materials involved, as well as the methods of handling them, from the foundation of the wall to the final touch of the master painter. The duty of the architect in relation to the painter naturally divides itself into, first, the scientific work, or the provision of walls fit to paint on; and, second, the artistic work, or the right adjustment of mass, the proper allotment and sub division of space, and the arrangement of border line and geometric form; and, lastly, the duty of the painter in relation to the architect will be considered.

Now, in seeking the best process for general adoption, it may be well to inquire a little into the history of the various processes before us, and at the very outset of our inquiry it will save time if we take it for granted that painting in siccio, as described by the monk Theophilus, was the method or process practised by the earliest wall painters, and which prevailed in spite of other discoveries down to the very latest period of Mediæval art.

There has been very much said and written of late about the chemical nature of mural painting, and the result, so far as I have been able to glean, is so unsatisfactory that if painting were to be judged by chemistry alone it would lead architects to abandon the idea of ever adopting colour in mural decoration, except in those few cases where the cost of mosaic would be allowed. But there is one view of the question which seems to have escaped the notice of all writers on the subject, but which I believe was the only one possible to many of the early wall painters, I mean the view which embraces the physical or mechanical nature of the art process. From the Mediæval writers we know that painting in siccio was practised in the time of Cennini, much as it was in the time of Theophilus. There were, however, some slight additions and variations. Thus, Cennini directs the white and yolk of an egg to be added to two potters of water for the "aspergatur" process. Theophilus was content with water simply. So, too, in the tempera, the older writer speaks only of water and yolk of egg. Cennini and the fifteenth century authors add to these shavings or fine cuttings of fig wood. The composition of the plaster for siccio painting is in no case described; but on examining old plaster which has been painted by this process, its coarseness as compared with modern plaster is at once manifest. It would appear then—first, that the bed or ground of the picture was of such a character as to allow of easy mechanical interstitial absorption. Second, that the plaster ground when dry was sprinkled or sponged with water, in order to set up that physical process of absorption which does not begin until the surface of a body is already saturated; the amount of moisture or humidity required varying according to the nature of the plaster or ground. Third, the colours were mixed with a little lime, and tempered with water as the base of the medium. For the common earths nothing more was needed, but for the rarer colours eggs were added to the tempera, so that the albumen should prevent too great an absorption of the colour. Then followed (fourth) the simple process known as capillary attraction. The porous ground in the first place drew in the medium so rapidly that a portion of the colouring matter entered its substance even to the depth of half an inch. In the second case the ground acted in a similar manner, but in a lesser degree. The colouring matter which remained on the surface became condensed and hard, and being incorporated mechanically with a porous surface

adhered, to be destroyed only when the latter was removed.

Of the materials used in the works of the middle ages, it is almost unnecessary to speak, every one knows that the permanency of those works is owing not to any extraordinary selection of materials, but to solidity of construction. As a rule, the wall stone was just what the immediate neighbourhood yielded. Occasionally, more for fancy than for profit, rich men built their castles or their churches of stone brought from a distance, sometimes even from over the sea; but then these were exceptions to the general rule. The mortar, too, like the stones which it bound together, was composed of the sand and lime which the particular locality furnished, the sand being rarely or ever screened. Many rubble walls were plastered outside as well as inside, and sometimes painted on both sides, the "plaster" being in texture much more like what we call rough cast. Indeed, the practice of plastering, stuccoing, or rough casting the exterior of buildings is by no means a modern invention. In the Saxon MS. of Caedmon we have the exterior of Seth's house, and the walls of "Egypt," thus treated and decorated with horizontal and vertical lines, circles, and foliated ornament in colour. Further evidence of this practice is supplied by the poem of Bëowulf. The Bayeux tapestry, the Terentius MS., and later MSS. in the British Museum. An examination of those buildings which retain their ancient plaster proves that in the great majority of instances the composition which formed the ground for painted decoration was much the same as that employed to bind the stones together. In short, the plaster and the mortar were very similar. In both, the sand (sometimes mixed with pounded tiles*) was considerably coarser than that now adopted, and was used in ordinary buildings with much greater freedom than is consistent with the present practice of the trade. The colour used in the every-day wall paintings of the middle ages were, for the most part, limited to yellow and red ochres, and a dark grey slate colour which, for the sake of brevity, may be called black, it being understood that the Mediæval artists and decorators never used pure black, but always mixed it with lime.

The neglect of this practice has led modern decorators into very serious errors, even in cases where they have deliberately copied old patterns and worked under the direction of the most accomplished architects. By mixture these three colours were formed in a scale something like the following:—

1. Yellow x lime = light yellow.
2. Yellow with only a little lime = yellow.
3. Yellow x red = dark yellow.
4. Red x yellow = light red.
5. Red with a little lime = red.
6. Red x black = brown red.
7. Black x lime = light grey.
8. Black with a little lime = dark grey.

In very many works the only colours used were Nos. 2, 5, and 8, and with proper management very remarkably good coloured decoration may be obtained by the use of this very limited scale, only there must be "proper management;" for even in the simple process of "lining out" it requires an artist's judgment to know when to interrupt the masonry diaper so as to prevent it from becoming monotonous.

DWELLINGS FOR THE HUMBLER CLASSES.

So frequently have we advocated the desirability, both from sanitary and social considerations, of landlords and owners of house property let out in tenements to the humbler classes, providing a better class of accommodation for the occupants, that it were next to superfluous here to dilate upon it, except that when a case in point can be adduced in illustration of a general principle, additional force is contributed to its enunciation, and precept becomes practice, stirring sorry contrasts full in the face, and encouraging to imitation all who are not devoid of an emulative spirit, or who do not sacrifice philanthropy *in toto* at the shrine of personal aggrandisement.

The honourable exception to that unfortunately too general rule which ensnares, or at least facilitates, not only the mental but the physical degradation of myriads of poor roomkeepers in this, as in many other thickly populated cities, that we are about to particularise, happens to afford not the first occasion on which it was our pleasing privilege to associate the name of a respected landlord with "the march of improvement;" therefore, it may be inferred that the results of previous enterprise must have been cheering, and that for the sake of poor humanity we may hope for many future repetitions of investment of capital in a similar direction.

In few districts of Dublin are tenement-holders to be found in greater number than in the important business thoroughfare of North King-street and the adjoining streets; and if we except the Liberties there are few in which a greater amount of poverty and wretchedness is to be found than in this locality; any attempt, therefore, on the part of a landlord to

* From the *Building News*.

* The presence of pounded tiles is by no means limited to Roman mortar.

make misery the less by providing a more comfortable class of homes for the poor, cannot be too highly lauded or accorded too much publicity.

Contiguous to the Linen-hall—the former scene of our fair city's commercial prosperity, but, alas, now only a barren record of a thing of the past—might he seen some short time since a rectangular block of ancient and dilapidated structures in New Coleraine-street, which the enterprising and philanthropic spirit of Henry Lindsay, Esq., have subsequently converted at a cost of nearly £3,000, into a range of substantial and modern dwellings, with neatly finished exteriors and commodious interiors, specially planned with every requisite accessory for letting out in “flats,” or portions, to the poorer classes. Here clean, well ventilated and lighted apartments are obtainable at the same rent (proportionate, of course, to the extent of the accommodation) charged elsewhere—even in the immediate neighbourhood—in filthy tumble-down houses, apparently impenetrable to sanitary inspectors (an honorary office forsooth), and whose tottering limbs demand the prompt attention of our city surveyor. The best proof of this improved accommodation being appreciated by the classes for whom it is intended is afforded in the fact, that scarcely were the skeletons in shape, and the first coat of plastering on the walls, when eager applicants for rooms beset the premises, and while we write there is scarcely a nook in the entire block not tenanted.

Not the least notable feature in connection with the premises generally is the effective sewerage arrangements; a new main sewer with branches from each house, and trapped cesspools having been provided amongst the earliest operations.

To landlords on whom fortune has bestowed her favors—as she has upon Mr. Lindsay—we would point out that estimable gentleman as a model for imitation and say, “Go ye and do likewise.” Need we add that we shall be only too happy to throw open our columns at all times to record any act designed or calculated to ameliorate the condition of the poor man, or make his home comfortable?—Communicated.

CORRESPONDENCE.

BELFAST ALBERT MEMORIAL.

TO THE EDITOR OF THE DUBLIN BUILDER.

SIR,—In your issue of March 15th there appeared a letter from Mr. Linklater, of Manchester, containing statements which, if true, were of a nature so compromising to the characters of all those concerned in the projected Albert Memorial in Belfast, as to lead one to think that the first opportunity would be taken advantage of to reply to charges so serious and so publicly advanced.

I am surprised to find that neither committee, architect, or contractor have made any attempt to disprove these statements, or to set the matter right before the public. Is it that these gentlemen are so satisfied of their own rectitude as to consider such imputations beneath their notice?—or is their “silence” to be interpreted as “consent?”

So long as such statements remain uncontradicted I look upon them as seriously compromising the honor of the profession, and on this account it is much to be regretted that some one of those interested—more especially the architect—has not come forward with a complete denial of the whole.

As the architectural bodies in England have taken up the question of competition management, with a view to improving its character as far as possible—and are not slow to exercise what authority they may possess over members of the profession, in order to prevent and correct irregularities—should it not be the province of our local Institute in like manner to take notice of flagrant violations of professional rules? For, if such doings as these referred to by Mr. Linklater are allowed to pass unchallenged, our profession, I am afraid, will become far from deserving the character of an honorable one. I remain your obedient servant,
A. B. C.

[We confess, had any reasonable grounds of refusal existed, we would have preferred to decline giving insertion to any letters on the Belfast Albert Memorial question, pending the appearance of some reply to the charges preferred by Mr. Linklater. It is a matter of very sincere regret to us that up to the present we have been put in possession of no contradiction or explanation of the statements advanced more than six weeks ago, and, feeling as we do perfect confidence in the good faith of all those implicated, we cannot but believe that Mr. Linklater's charges, if any grounds exist for them, must be capable of satisfactory explanation. This makes it all the more to be regretted that no reply has been vouchsafed. The builder concerned most probably has been of opinion that no reply was specially demanded from him, the architect possibly feared the commission of some breach of etiquette or good taste, and the committee, with still greater probability, have assumed that charges made

by an almost unknown man in an obscure class-journal, the DUBLIN BUILDER, were to be treated with contempt. We can earnestly assure them that this matter has become the subject of comment and discussion in circles far wider than the DUBLIN BUILDER ever reaches, and this solely arising from the letter in this journal which we have referred to, and which has been permitted, unwisely we think, to remain unquestioned and unexplained up to the present time.]

TAIT TESTIMONIAL, LIMERICK.

TO THE EDITOR OF THE DUBLIN BUILDER.

SIR,—Will you kindly inform me in your next publication has the design been selected for the Tait Testimonial—an ornamental clock tower.

According to an advertisement which appeared in the newspapers, I prepared a design and forwarded it by book post on the 18th November last, directed to Messrs. R. Anglim and W. Carroll, secretaries, Chamber of Commerce, Limerick, and have heard nothing of it since. I am, sir, yours truly,
20th April, 1866. A COMPETITOR.

[As in the case of a competition above-named—the Belfast Albert Memorial—where the three prizes fell to three Belfast men, in this Limerick *ante-mortem* memorial competition they were awarded to three Limerick men. The coincidence is striking but not of an unfrequent character, and must be accepted as a gratifying proof of the vigour of native talent fighting on its own field, and as a refutation of that erroneous notion that a prophet has no honor in his own country. The prizes were awarded, we believe, long since, and were disposed of as follows:—1st prize, Mr. Corbett, City Surveyor, Limerick; 2nd prize, Mr. W. Fogerty, Limerick and Dublin; 3rd prize, a gentleman in the office of Mr. Paine, architect, Limeick, whose name we have forgotten. We heard a rumour, at the time of the competition, but would be sorry to vouch for its authenticity, that, after awarding the first prize the committee were so impressed with the equality of talent exhibited in all the other designs, and the fallacy of Order being ‘Heaven's first Law,’ proceeded to put the names of all the competitors save No. 1 into a hat, and to draw for Nos. 2 and 3. If such were the case, our correspondent must see at a glance that it at once absolves the committee from any charge of wholesale local favoritism. He must also admit that such a system of distribution would possess points of fairness not enjoyed in many other instances, and that in adding to an architectural competition that pleasant excitement coincident with a “sweep” on Punchestown, a novel element of liveliness would be given to a race for “consolation stakes.” We beg, however, of our correspondent not to place implicit faith in our version of the story, but to apply to the secretary for the true one and his plans, and in the event of not obtaining the latter before a certain day to be named, to employ the aid of the most vicious solicitor his locality can furnish. The system of uncourteous retention of drawings and designs by committees is an everyday evil, and a secretary made ‘an example of’ is most desirable as a precedent *pour encourager les autres*. “Competitor” will be so good as to favor us with his name and address (not for publication) which, as we have no doubt, were inadvertently omitted; we have given insertion to his letter though contrary to rule.]

BATH STONE.

TO THE EDITOR OF THE DUBLIN BUILDER.

SIR,—Allow me to say, in answer to your remarks on Bath stone, in your last issue, that the Bath stone Company (Limited) has been chiefly formed for the purpose of procuring a good, sound, strong, weather stone; this they are prepared to supply in any quantities. If Bath stone be properly selected it is far more durable than Caen stone. Buildings erected with Bath stone can be shewn you a hundred years old, the molding of which is still perfect, and the stone of good color. Architects would do well to specify the quarry from which the stone is to be obtained. This Company is prepared to warrant the weathering qualities of their stone, and trust they will be able to introduce it into Ireland in larger quantities than has hitherto been sent. There are plenty of architects, builders, &c., of respectability and long standing, who are ready to certify the good quality and durability of this stone. Much cause has been given for the bad name the stone has acquired in some places through the stone not being properly selected and used, being derived of small quarrymen, who seek only immediate profit, and consequently send out all the stone they dig, whether good or bad. This thing may be avoided by architects specifying the quarry from which the stone is to be had; especial care would then be taken in the selection of the stone.—Yours obediently, for the Bath Stone Company (Limited),
E. A. TUCKER, Secretary.
—Advt.

THE O'CONNELL MONUMENT.

TO THE EDITOR OF THE DUBLIN BUILDER.

DEAR SIR,—Being the person who prepared for the O'Connell Monument Committee the preliminary plan for the information of artists competing for that great national work, I trust I may be permitted, for the first time, to lay before the public a few remarks on a subject which has so much engrossed the attention of Irishmen, and on which, perhaps, some important points yet remain unsettled. In taking this liberty I am influenced by no motive whatever beyond a desire to see a design secured worthy of Ireland and the great man to be commemorated, and the execution of the work in all its details judiciously entrusted to hands the most likely to give general satisfaction. By the report of the proceedings at the meeting of the committee, held on Friday last, it appears that it has been suggested by Mr. Foley that an architectural design should be procured, and, if he should approve of it, he will undertake the execution of the statue. Much as I have heard of that eminent artist I am certain that nothing has yet emanated from him in connection with this work which goes farther to prove his high professional reputation than that wise suggestion. It has always been my opinion that no monument on which so large a sum as £10,000 was to be expended could meet with the wishes of the public but one principally of an architectural character—not losing sight of the importance of having a statue designed and executed by Mr. Foley or some other eminent Irish artist. The principal object to aim at is the procuring of an architectural design, which, when carried out, would be grand in its general appearance. The stranger, entering Sackville-street for the first time, gazes on the Doric pillar of Nelson, and takes in at one glance the beauty and harmony of the whole without waiting to criticise whether the statue which surmounts it is perfect as regards the arm or the face. In the square of Trinity College the *tout ensemble* of the bell tower is surveyed by a spectator, and the merit of the design at once decided without a minute examination of the figures overhead, whose just disposition and dimensions were indispensable conditions secured by the architect to aid in producing a good general effect. A foreigner, entering the port of Limerick, is delighted by the grandeur of the Wellesley-bridge, with its noble arches and massive ornamental balustrades, reserving for a leisure hour the examination, as to artistic merit, of the bronze statue—admitted to be beautiful—erected thereon to commemorate her Excellency's brother, the late Lord Fitzgibbon, who fell in the celebrated cavalry charge of Balaklava. I, therefore, am of opinion that the best manner in which to proceed with the O'Connell monument is to have the design made by an architect, his genius being left uncontrolled, and he must fail in his project if he lose sight for one moment of the proper dimensions of the pedestal, statue, or figures intended to form part of the work to be executed exclusively by the artist. He can no more do so than permit the columns and capitals which chiefly characterise a work of architecture to be thrown out of shape and proportion through the caprice or neglect of a builder. In no other way, in my opinion, will the great work under consideration be satisfactorily brought to completion. But where a statue alone, such as that magnificent one by Foley erected in front of Trinity College is required, there can be no controversy about the whole design being entirely within the domain of the sculptor. Of course, an eminent architect in his design will, where he thinks necessary, leave panels for bas-reliefs, or places for sculptural figures to commemorate passages in the political life of O'Connell; and then the question arises, can more than one artist be employed on these portions? In reply, some have already said that the distribution of such parts among several sculptors would produce “an incongruity.” I respectfully submit that, on the contrary, each artist's part being confined to the space allotted to it by the architect of genius, it would be productive of a variety which would be accounted of great value to the work by the present and future generations. Now, let me refer to the Wellington Testimonial and ask, is there a man of taste who is not more gratified to behold on its three sides the designs of three able artists—Hogan, Farrell, and Kirk—than if all were the work of one man? Does not the combination of three intellects produce, instead of an incongruity, the great interest which variety always possesses? And in passing, may I not ask, notwithstanding the admitted artistic beauties encircling this monument, how many thousands pass by without admiring, or even observing, them, because of the absence of architectural elegance, which is essential, in the first instance, to attract attention? In further illustration, let any man who visited the Sculpture Hall of the Dublin Exhibition of last year be questioned, and he will say the grand specimens there displayed—the productions of gifted artists from different parts of Europe—delighted him infinitely more than they would if all were the creations of one man, even

though he were the greatest among the exhibitors. So would the combination of the works of several artists on the O'Connell Monument enhance its grandeur and its value. In reference to the question first to be settled—the procuring of an architectural design—I beg leave to mention that some years ago I happened to be member of a committee having to select the best plan for a building for a public institution on which £4,000 was to be expended. We invited three architects to send in designs, and succeeded in selecting one which was carried out to the entire satisfaction of every person who took an interest in the institution. From this experience I would respectfully submit that a similar course would be advisable for the O'Connell Committee to adopt on the present occasion. However great the fame of one man, he may fail in furnishing the design required. It is well known that often an eminent man in architecture, sculpture, or poetry descended from the professional height he had attained through being assigned a heavy task, during the essaying of which he nervously weighed and feared the expectations of the critical public outside. But if three eminent men compete, there can be little doubt of the success of the committee in obtaining a satisfactory design. In that case I would give no prize to the author of the successful plan, his commission on the architectural portion of the work would be sufficient; but I would award prizes to the other two commensurate with their professional status.

CORNELIUS CARMODY, C.E.

THE LAWS OF CREDIT.

CREDIT is an edifice resting on two foundations: character and means. In its original elements mercantile credit resolves itself into trusting a man's word. "I let you have my goods on your promise to pay for them." Whether the promise will be fulfilled or not, time only will show; but it is presumed that before such a transaction as this took place, there was that knowledge of the character of the person trusted which would lead to the belief that his word might be relied on. A person, however, may make a promise of this kind, and, when the time comes for its fulfilment, may not have it in his power to perform,—he would pay if he could, so that you cannot impugn his honesty; he meant to pay when he promised, so that he cannot be charged with falsehood. So far, then, his character is clear; but the damaging fact remains that he cannot perform his promise, which leads to the observation that, unlike a simple trust in a person's truthfulness in warranting a matter of fact, mercantile credit has to do with other elements of character besides probity and honour. The person who has your goods may be honest; he would pay if he could, but he is perhaps improvident; he has neglected to shape his business so that the means would be forthcoming in time. Or, though perfectly truthful, he is thoughtless. When he took the goods, and promised to pay for them at such a time, he fully meant to do so; but he did not consider that the purchase was beyond his means, or that the goods was not such as his customers required; or that, though the goods were of the right kind, he was buying far too many of them. The existence of any one of these circumstances would put it out of his power to perform his promise.

But let us reverse the picture. You take my goods or my money, and I take your promise to pay. The time for the performance of the engagement comes, but the promise is broken. Unfortunately in this case there is a strong reason to suspect that you could pay it if you would; the creditor applies, but meets only a renewal of the promise, probably couched in uncommonly civil language, but still the civility amounts to nothing but a promise. A fresh application only produces the same result, until finally the law is resorted to for the purpose of compelling the promise to be performed.

When we say, then, that character is one of the foundations of commercial credit, more is intended than that such a one is honest and truthful. Before commercial credit can be firmly based there must exist, in addition, prudence, forethought, industry, and economy; to which, indeed, we may add another, viz., knowledge of the business to be carried on. The question of character, in fact, is an exceedingly difficult and complex one; the degrees in which desirable qualities may meet and mix in any individual, are almost infinite, and the matter will become more complex still if we remember that good qualities and bad are sometimes found mingled in the same person, often in the most contradictory manner. Those whose business it is to grant credit find the advantage of a special study of human nature; indeed, many of them have a sort of instinct in discerning character, and owe to this no small part of their success.

We have not, however, exhausted the foundations on which credit should rest: the second one, and equally important, is what we have called "means." However honest and provident a man may be, misfortune may overtake him. A fire or a

flood may sweep away his property: a bad harvest may impoverish the district in which his business is carried on, and impair the value of his book debts, sickness or death may enter his house, persons whom he trusted may have proved unworthy of confidence; in short, we cannot enumerate the ways in which the honest and prudent man may become unable to fulfil his engagements, if he has no reserve to fall back upon. Hence the importance of such a reserve;—that is, of adequate business capital, so that when, from any reason, the means of fulfilling an engagement are not forthcoming out of the current receipts of business, the capital may be ready to supply the deficiency. Business capital may therefore be looked on as a margin against loss; and on its amount, in conjunction with the "character" before mentioned, depends the degree of credit which may reasonably be granted. Capital, however, may be available, or otherwise. A person who asks credit may be able to show a balance-sheet in which his mercantile assets will balance his liabilities, leaving a certain amount of real estate to represent his surplus, or capital. But, the real estate may be utterly unsaleable, or it may be partially encumbered; in which case the encumbrance is a personal liability, and may prove a drawback on the assets instead of an addition to them. Or, the capital may be represented by a mass of book debts, the realisation of which would be attended with infinite difficulty and considerable loss, or of stock in trade, which has been lying on the shelves for years, and may be put down, for all practical purposes, as unsaleable.

In this country, it is no uncommon thing, as bankers and merchants well know, for traders of considerable nominal capital to become embarrassed, and on their estate going into liquidation, for the surplus wholly to disappear, not by dishonesty, but by depreciation of assets. Nay, more than that, during the last few years we have had scores of instances where traders, who estimated themselves to have a fair capital, became insolvent and did not pay more than five shillings in the pound. In such instances, it was generally found that the surplus, and more, was represented by real estate of some kind, which, on the attempt to turn it into money, left the nominal owner in debt when incumbrances were discharged.

Capital, therefore, to be a foundation for credit must be really available. A trader's assets should at all times be such as can be turned into money; he should keep his books in such a shape that the actual cash surplus or deficiency should at all times appear. If bad debts are made, they should be written off:—if debts become doubtful, they should be written down to their value: encumbrances on real estate should be treated as personal obligations; and in estimating his position, a trader should always deduct from his assets a percentage for contingencies. He may then know how he really stands; and if a statement is asked from him, as it probably will be, by those from whom he asks credit, he can show them, with a safe conscience, and with the certainty that his statement will stand the test of unforeseen circumstances, that he has a reserve of means to fall upon. When, therefore, a person asks for credit, the course of inquiry should be as follows:—1st. Is he honest? 2nd. Does he understand his business? 3rd. Is he prudent, temperate, economical, and industrious? If these inquiries are answered satisfactorily, the further inquiry may be put:—4th. Has he a capital available as against reserve misfortune. 5th. Is the capital such, both in nature and amount, as to ensure an adequate margin against the risks of his business? On the answer to such queries will depend the credit a trader will get from an intelligent and prudent man of business. As to credits granted by men that are not prudent and intelligent, they are a source of mischief both to the granter and the grantee.—*Trade Review.*

UNDERGROUND RAILWAYS FOR PARIS.—The French capital has just been placed in a state of great excitement by the project of M. Edoux, civil engineer, who proposes to effect a great revolution under the city as M. Haussman, the prefect, has done above ground. His plan is to construct a system of subterranean railways diverging from the Palais Royal as the common centre, and connected at the ends by an outside circle. One line is to go down the Rue de Rivoli, under the Place de la Madeleine and the Rue Tronchet, to the railway terminus of St. Lazare; another is to go under the market-halls, and thence either under or over the Seine to the terminus of the Orleans Railway. From the market-halls a branch line is to be carried under the Boulevard de Sebastopol and the Boulevard de Strasbourg to the termini of the Northern and Strasbourg railways. A second branch is to go under the Boulevards and the Place de la Bastille to the termini of the Vincennes and the Lyons railways and lastly, a line is projected from the Palais Royal, and under the Champs Elysées to the Bois de Boulogne.

BOOKS, ETC., RECEIVED.

Stokes on Memory. London: Houlston and Wright. Seventh edition, enlarged and revised.

This is a very eccentric little volume indeed, and the first impression given by it to any one not versed in the study of mnemonics, would be that the writer hailed from Colney Hatch, and not from the Polytechnic Institution. A little appreciative study, however, will soon show that this is very thoughtful oddity in a very important subject. The very queer-ness of the book makes it the more readable, and relieves the subject of all dryness.

The blessing of a good memory is a thing that cannot be too highly appreciated. Our writer argues that almost every gift or faculty of the mind, concentration, imagination and conception, comparison and reflection, love, pleasure, faith, conscience itself, are but memory, or the result of memory in another form. The science of memory, or the natural, almost unpeceivable, mnemonics of the mind are very difficult of analysis, as few people possess that sensitive introspection which enables them to investigate the subject. That the action of the mind, excited in memory, is at least aided by some such natural system, often by association of ideas apparently the most incongruous, there can be little doubt. To quote an example—it would naturally be considered a piece of downright ignorance when the north point of the compass was indicated, for anyone not to be able to point out the east and west without hesitation. We put one day to some architects the question (when looking at a setting sun) "when you are asked to point to the north or south do you do so without any appreciable effort of thought—by intuition as it were?" Without exception it appeared that the contrary was the fact. One mentally referred to the cathedral of his native city, another to mountains which surrounded the home of his earlier days, and another to the cardinal points of some old vane that had been under, or rather over, his nose for years; another confessed that Henry Russell's song "To the West," was his association with the proper direction of America. And that the old newspaper headings, "The War in the East," familiar some ten years ago, were his guide to the other hemisphere. But the question still arises, can this natural process of thought be superinduced by artificial or rather mechanical means? This is the real touchstone, to which to bring Mr. Stokes' theories. In the hands of such a teacher possessing the very peculiar graphic vein which this book instances we think it might be. Testimonials of the very highest character testify to the success of Mr. Stokes' teaching, and as the subject is made so very entertaining, we look forward with pleasure to his appearance among us as a lecturer, which we believe may be expected. Bad memories, or unexercised memories, as Mr. Stokes would call them, are nothing short of a social curse; and we wish one half of our acquaintance—perhaps not excepting ourselves—were under Mr. Stokes' treatment, if he would do us any good.

An Outline Sketch of Rainfall: Investigations from A.D. 1677 to A.D. 1865. By G. J. Symons, F.M.S. London: Taylor and Francis.

Monthly Meteorological Magazine. Edward Stanford, Charing Cross.

Very valuable publications for every scientific man, civil engineer, &c., interested in rainfall investigations and the observance of all other meteorological phenomena.

"The M'Anaspie" honors us with a very original manifesto on the subject of the O'Connell Monument, printed in violet ink—possibly as emblematic of lowly unobtrusiveness. Some hard truths are found amid the general confusion.

Cassell's Family Paper, No. xv., is accompanied by a beautiful specimen plate of Gustave Doré's illustrations for Family Bible.

S. O. Beeton's serials for May—*Boys' Magazine*, *Boys' Own Magazine*, *Englishwoman's Magazine*—are fully up to, if they do not surpass, former issues.

L. A. W.

COURT OF CHANCERY.

The Commissioners of Public Works v. the Midland Great Western Railway.—This case, which was before the court on former occasions, came on now on report, exception, and merits. The report was made by Master Murphy. The petition was to restrain the Midland Railway Company from further proceeding with an action which they had instituted at law against petitioners to recover damages for injuries to the Royal Canal, by reason of the Mountjoy Prison not being supplied with proper tanks for containing

the refuse of the prison, and proper gratings, &c., and in consequence of the want of which such refuse went through the sewers of the prison and was discharged into the canal and caused obstruction to the navigation of the canal, and rendered the water impure, and in consequence of the accumulation of such offensive matter along the banks of the canal, certain proceedings were threatened or taken by the Sanitary Commissioners against the railway company. At the original hearing the Lord Chancellor directed a reference to the Master to ascertain what injuries respondents had sustained by the neglect of petitioners. The Master by his report found that petitioners were only liable for one-fifth of the damage suffered, by reason of the accumulation of matter, &c., as there were certain other public sewers which contributed to such accumulation, and he estimated the damage at a certain rate per cubic yard, and to this report exceptions were now taken. It appearing that since the hearing of the cause new and proper tanks had been supplied. The Lord Chancellor thought that two engineers, one from petitioners and the other from respondents, ought to make observations on the place in question; the case to stand over.

NOTES OF NEW WORKS.

A picture-room and other additions and alterations have been completed at Pellipar House, Dungiven, County of Londonderry, the seat of James Ogilby, Esq., from the designs, and under the superintendence of Fitzgibbon Louch, Esq., C.E., of Dublin and Londonderry. Mr. Samuel Mercer, of Newtownlimavady, contractor.

Premises for a new branch of the Bank of Ireland have been taken in Thurles, Co. Tipperary.

Tenders are required for building a new Roman Catholic church at Rathkeale, Co. Limerick, up to June 1st. Mr. J. J. McCarthy, architect. See advertisement.

A new Theatre is to be built on the site occupied by the present dilapidated building in George's-street, Cork.

A very large new mill is almost completed at Ballymena, for the Braid-water Flax-spinning Company. The building is of red brick, with Tardree granite dressings, and has been erected on a site known as Bell's Green, on the banks of the Braid-river, close to the town. The entire cost when completed will be about £40,000. Architect, Mr. Jackson, Belfast; builder, Mr. McMaster, Belfast.

A new house is about to be built at Woburn, Donaghadee, Co. Down, for George Dunbar, Esq. Architect, Mr. McCurdy.

Operations have been again commenced in connection with the erection of the new bridge over the Boyne.

The Kingstown Harbour Commissioners are about to form a free bathing-place for females at Salthill.

Tenders are required for the heating of the County Down Lunatic Asylum, up to the 21st inst. See advertisement.

MONUMENTS, STATUES, ETC.

A monument to the memory of the late Rev. F. B. Woodward, for fifteen years incumbent of the English Protestant Church in Rome, is to be erected in the cemetery there.

A meeting of the friends and admirers of the late G. V. Brooke was held on the 23rd ult., at the Northumberland Hotel, for the purpose of adopting measures to perpetuate his memory in his native city in a manner worthy of his name.

The tenantry on the Herbert estate in the County Kerry propose to erect a monument to their late landlord, for whom they entertained a sincere regard, and whose demise they regretted.

A monument has been erected in the Chapel-yard, Downpatrick, to the memory of the late Dr. M'Auley, parish priest of Down. It stands thirty feet high, and is considered to be happy in design and creditable in workmanship; but a correspondent in a local paper takes exception to a bust sculptured on it, which it describes as, "the bust of some knight of the woeful countenance, instead of one who knew not how to frown."

A monument to the late Dr. J. P. Mackesy, is proposed to be placed in front of the Leper Hospital, Waterford, to which institution he was surgeon and consulting physician for many years.

The friends of the late Lorenzo H. Jephson, Esq., J.P., anxious to erect some memorial of his worth and of their esteem, have decided upon placing a suitable monument in Carrick-on-Suir church.

MISCELLANEOUS.

The Ship Canal at Newry will be closed for repairs from the 21st inst.

The Carrickfergus Harbour Commissioners have accepted the tender of Mr. Monk, who is the contractor for the Belfast New Docks, for the construction of the new quay of Carrickfergus, Co. Antrim. The tenders were: Messrs. Edwards and Nicholson, £8,600; Messrs. J. Dixon and Sons, Larne, £7,500; Mr. Monk, £5,200. The work is to be completed in December next. The Commissioners of Public Works have extended the period for repaying the loan to fifty years, instead of thirty, as at first stipulated.

The tenantry on the Powerscourt estates have commissioned Mr. Weigall to paint the portraits of Lord and Lady Powerscourt. They are to be ready for presentation in a few months.

The Belfast Harbour Commissioners are in receipt of £1,000 a month more than in any former year.

The Drumkeel slate quarry, within a few miles of Bantry, has been taken by a Belfast company, who have brought over a Welsh manager, a Welsh dresser, and a Welsh smith. They have fifty men in their employment, and the slates are dressed and prepared by an improved patent dressing machine. The quarry was bought out by Mr. Lisseble, who, we regret to say, has been obliged to resign through ill health.

The Wicklow Copper Mine Company have declared a dividend of fourteen shillings a share, free of income tax, for the half-year, ending the 1st of March, 1866.

The names of the twelve architects selected to give designs for the New Law Courts, London, are:—Mr. H. R. Abraham, Mr. E. M. Barry, Mr. R. Brandon, Mr. Burges, Mr. T. N. Deane, Mr. Garling, Mr. Gibson, Mr. H. F. Lockwood, Mr. Seddon, Mr. Scott, Mr. Street, and Mr. Waterhouse.

On Monday evening a portion of the Bessbrook Spinning Mills, near Newry, was destroyed by fire. It appears that one of the workmen accidentally trapped on a lucifer match, the spark from which seized on the loose flax around, and, though not an interval of two minutes elapsed till the arrival of the engine, which was soon put into requisition, not only were the wooden frames below in cinders, but the supposed fire-proof roof, with all its iron supports and girders, came down in one mass. The machine-house, a towering stone edifice close by, and the stores, largely stocked with flax, ran a narrow chance of escape—the flames actually rushing into the windows of the former, and only kept from the latter by a huge metal door, which for the time looked like the side of a furnace. At a moment's notice over 200 men and boys were pouring torrents of water on the fire, regardless of their own safety. We are glad to say that no personal accident is reported. The fire-engine—a most efficient machine, from the establishment of Shand, Mason, and Co., London—was used under the direction of Mr. James Sharp. The entire loss, which is under £1,000, falls on the Messrs. Richardson, proprietors of the mills. The accident will not occasion the suspension of the work: a few weeks will suffice to have the wing restored.

The Town Commissioners of Blackrock have resolved on raising £1,500 for the purpose of completing their town-hall.

In the discussions that are now going on about the Law Courts competition, few realize sufficiently the magnitude of the plans, or the extreme difficulty which any judges will have in comparing many sets of plans of such intricacy as are involved in the matter. The recent decision of the House of Commons, by which the number of competitors was increased, will be unfortunate if no limit is imposed. We cannot expect our best architects to spend so much time in working out such details as are really necessary, if there is to be a general scramble. Now-a-days, the first question of an invited competitor is, "With whom am I to compete?" If the answer indicates that no reasonable care has been taken to match able men, the most promising antagonists simply leave the field, so that the British public, which cannot hire an architect as a cabman may be hired, has to do the best it can. When men talk of discovering merit by having large competitions, they do but show the continued existence of that queer old-fashioned delusion which lauds the "self-taught," meaning thereby mushroom genius, whose inspiration has come without labour and experience. Another source of this mistake is in the belief that architects have done their work when some nice drawings are made. An unpleasant illustration to the contrary was found at the Foreign Office competition, when it turned out that the first prize-holder was unable to execute his own composition. What is really wanted is a selection of men who are competent not only to make a good general design, but also to execute details well, and, more, to manage all those necessary though prosaic

parts of their work which are included in the management of the mere business it invokes. Possession of such qualities can only be proved by practice and reputation.—*Athenæum*.

The carpenters employed at the Down Lunatic Asylum struck about ten days ago, for an increase of wages. They were in receipt of 20s. a week, and their fresh demand was 25s., which the Messrs. M'Gaughey, the contractors, declined to pay. The men were at once paid off and allowed to seek employment elsewhere.

Mr. Nichol, R.S.A., sends this year to the Royal Academy a picture, entitled "Rent Day in Ireland." Mr. Nichol continues to draw his inspiration with the same unabated industry from studies made among the peasantry of Meath and Westmeath; his marvellous truthfulness and keen humour increasing and chastening year by year. Nor is humour Mr. Nichol's forte solely. Those who recollect "Waiting for the Train at Ballinasloe," in the Royal Academy Exhibition of 1863, can never forget its simple touching pathos.

The principal builders in Belfast, in reply to a memorial addressed to them by the Bricklayers' Association have agreed to give their bricklayers a full hour for dinner each day.

The Belfast Central Railway have commenced operations at Ormeau.

A lady, a member of the Presbyterian Church, has made the noble donation of £2,000 to the Assembly's College, Belfast, for the purpose of erecting dwelling-houses on the college grounds for two of the professors. Considerable funds are available for the erection of a third house, for the president; but not sufficient for its completion. The college grounds, extending to nearly four English acres, are now free of rent, the trustees having purchased the head rent, recently offered for sale in the Landed Estates Court.

Professor Frankland has communicated to the *Philosophical Magazine* a note received from Captain Briggs, of the Talbot steamer, giving an account of the occurrence of the rare electrical phenomenon termed "St. Elmo's Fire," in the Irish Channel, off the Isle of Man, on the morning of the 17th ult. During a severe snowstorm, which lasted from one to three a.m., blue lights appeared at each masthead and gaff-end. Captain Briggs had the opportunity of closely examining one light which appeared at the stem-head. He found that the light, which appeared large at a distance, was made up of a number of jets, each of which expanded to the size of half-a-crown, appeared of a beautiful violet colour and made a slight hissing noise. He felt a sensible warmth when he placed his hand in contact with one of the jets, and three of them attached themselves to as many fingers; but he could observe no smell whatever. The jets were not permanent, but sometimes went out, returning when the snow was heaviest. At daylight he carefully examined the place, but no discoloration of the paint was seen. He states that the ship is an iron one, but that he did not observe any effect upon the compass; and that he had seen the phenomenon abroad, but never in these latitudes. Professor Frankland remarks on this statement that there had been about the time much electrical disturbance in the atmosphere, and that he had ascertained that a thunder-storm passed over Cheshire on the evening of March 6. The brush discharge seen to issue from various parts of the ship he considers to indicate a negative charge, either in the surrounding atmosphere or in the snowflakes falling thickly at the time.

A new system of building has been introduced in Paris. The Boulevard de l'Empereur, which is being finished, passes over the road at a height of 45 feet, and is supported, not by stone, but by cement, deposited in wooden frames, to prevent it from spreading. The church of Vesinet was built in this manner, but it is the first time that cement has been entirely substituted for stone in a great building in Paris.

TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

All Communications respecting the DUBLIN BUILDER, should be addressed to Mr. PETER ROE, 42, Mabbot-street, to whom all payments for Subscriptions and Advertisements must be made.

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From WILLIAM TITE, Esq., M.P. for Bath, and Architect of the Royal Exchange, London.

House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have used both the sorts of Cement manufactured by your firm, and that of Messrs. Francis & Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good. I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant,

Messrs. White & Son. (Signed) WILLIAM TITE.
From R. O. MINNIE, Esq., Surveyor to Board of Ordnance, London.
War Office, Pall Mall, London, S.W.,
3rd March, 1864.

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(Signed) R. O. MINNIE, Surveyor.

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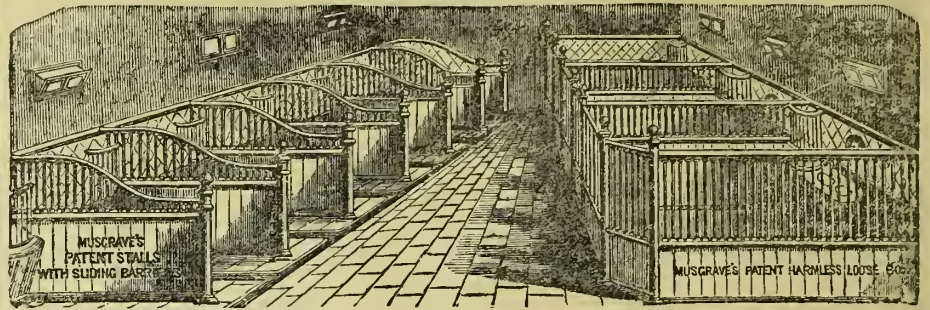
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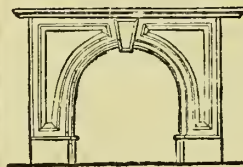
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Licenses granted for the Manufacture of this remarkable material, and Agents appointed in any part of the United Kingdom. References given to works already executed, and to several Engineers and Architects, of the highest eminence, by whom it has been applied; also to existing Licensees, whose works are in full operation in different parts of the Kingdom.

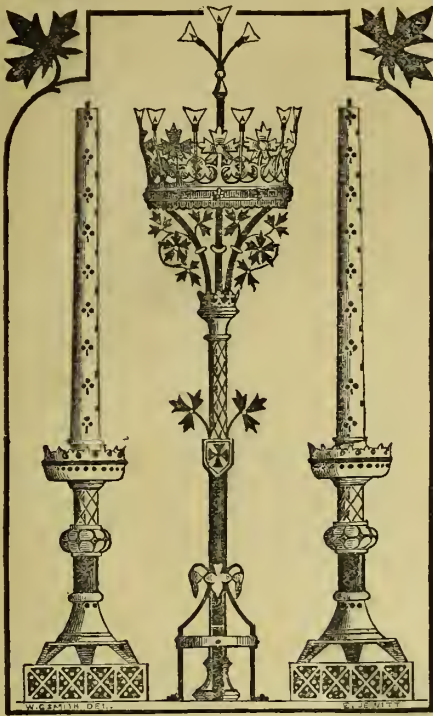
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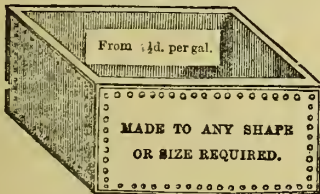


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OUR IMPROVED, SELF-FEEDING,
Slow-combustion, Vertical Tubular Boiler, for Heating Green-houses, Vineries, Churches, Public Buildings, Warehouses, &c., has proved itself most efficient from its immense heating powers, combined with small consumption of fuel. Our system of laying down Pipes is also worthy of attention.

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N.B.—Plans, Specifications, and Estimates, free on application.
Agents for Milner's Fire-proof Safes and Hornsby's Patent Washing and Wringing Machines.

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TUPPER & COMPANY,
61A, MOORGATE STREET, LONDON, E.C.
Galvanized or Lead Service Pipe, Brass Ball Valves, Bib Cocks, &c.
Prices delivered in London.
N.B. A Discount to the Trade, Builders, &c.

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GALVANIZED TINNED IRON, CORRUGATED AND PLAIN;
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DUBLIN, Manufacturers of every description of GAS BURNERS, on economical principles, and PORTABLE GAS LAMPS, beg leave most respectfully to offer to the Gas Consuming Public an improvement in Gas Burners, containing the following advantages:—A self-regulating Preventative of waste of Gas, Deposits of Carbon, Noise while Burning, and an Improvement in Combustion.

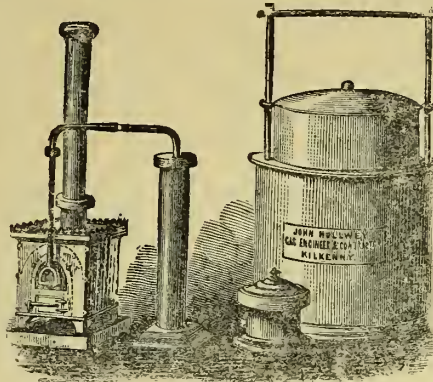
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GENERAL IRONMONGERY STORE,
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SAMUEL GATCHELL & SONS,
(Late of Mountrath-street and Pill-lane)
Improved WEIGH BRIDGES, with relieving Levers;
WEIGHING MACHINES of every description.
AGENT for the NEW PATENT AGATE SCALES.

POOLEY'S PATENT WEIGHING MACHINES.—These Machines are used upon the principal railways of Great Britain, and are unrivalled for accuracy. Specimens may be seen, and every information obtained from
H. SIBTHORPE AND SON,
11 & 12, CORK HILL, DUBLIN

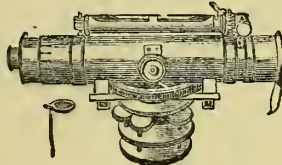
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SACKVILLE-PLACE, DUBLIN.



SMALL PORTABLE OR FIXED GAS
WORKS for Villas, Mansions, Railway Stations, Farm Steadings, &c., or any Establishment where from 20 to 50 or more lights are required. These small works are both simple, cheap, and effective; can be worked by any ordinary laborer, and will produce Gas from Coal, Canual, or Peat at a small cost. Larger sizes for Villages, Towns, and Cities.
Prices, Plans, and every information afforded on application to the Manufacturer,

JOHN HOLLWEY,
GAS ENGINEER & CONTRACTOR,
KILKENNY.



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JOHN ARCHBUTT, 20, Westminster Bridge Road, Lambeth, near Astley's Theatre, respectfully calls attention to his Stock of the above articles, manufactured by superior workmen. The prices will be found considerably lower than ever charged for articles of similar quality. An illustrated price list forwarded free on application. 8-inch Dumpy Level complete, 6 guineas; 10-inch ditto, 8 guineas; 14-inch ditto, 10 guineas; with compass, 1 guinea each extra. Best 5-inch Theodolite, divided on Silver, 18 guineas.

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FOUNDRY AND BRASS WORKS, ROTHERHAM,

DUBLIN BRANCH,
Mr. J. B. GILPIN, 53, WILLIAM-ST.

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PATENT ABSOLUTE WATER WASTE PREVENTER;
SIEMENS' AND ADAMSON'S PATENT WATER METER;
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IMPROVED SELF-ACTING AND PULL WATER CLOSET;
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GALVANIZED IRON TUBES AND FITTINGS.
Crosley and Goldsmith's Patent Compensating Wet Gas Meter.

GUEST & CHRIMES, in calling public attention to the above Advertisement, wish to say that samples of the various Articles manufactured by them may be seen at their
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F. SWINBURN.

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To be obtained of MESSRS BOYD & GOODWIN, Dublin; and MESSRS. DOBBIN & CO., Belfast.
See Advertisement in another column.

ROBERT C. ANDERSON'S
BRASS FOUNDRY AND PLUMBERS' FURNISHING WAREHOUSE,
3, SWIFT'S ROW, DUBLIN.

JOHN COATES,
(Late Foreman and Successor to W. R. Manderson),
Marble Works—173, GREAT BRUNSWICK-STREET,
Manufacturer of Tablets, Monuments, Tombs,
Head Stones, Chimney Pieces, Table Tops, Fonts, &c.

JAMES FAGAN & SONS,
Manufacturing House-smiths & Bell-hangers,
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Gates and Railings of all descriptions made.

PATRICK McCANN, MEDIAEVAL GLASS
PAINTER, PLAIN AND ORNAMENTAL CATHEDRAL GLAZING,
AND PATENT METAL SASH MANUFACTURER.
GLASS BENT TO ALL CURVES AND SHAPES
On the shortest notice All at reduced prices.
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(Four doors from Sackville street.)

TO HIS GRACE THE DUKE OF LEINSTER, &c. &c.
JOHN BRENNAN, PAINTER, DECORATOR,
AND GILDER,
EMBOSSER ON WHITE AND COLOURED GLASS
For Ecclesiastical Work in Mediaeval and other styles.
WOOD STAINING ON AN IMPROVED PRINCIPLE.
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VALUATOR, MEASURER, and SURVEYOR, &c.,
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Plumbers, Iron & Brass Founders, & Lead Merchants,
92, MIDDLE ABBEY-STREET, DUBLIN,
And DUNLOE-ST., BALLINASLOE.

MANNIN'S Wholesale and Retail Drug,
OIL, COLOUR, and GLASS WAREHOUSE,
2, GREAT BRUNSWICK-STREET.
(near D'Olier-street.)
Cattle Medicine of all kinds.
N.B.—Every article is warranted genuine, and at the lowest price.

UNION PLATE GLASS COMPANY.
The very beautiful article of Plate Glass, manufactured by this company, can be had at the price of the lowest in the market, shipped to any Port in Ireland.
H. SIBTHORPE AND SON, Agents for Ireland,
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The Dublin Builder.

ILLUSTRATED RECORD OF ART, SCIENCE, INDUSTRY, & MANUFACTURE.

No. 154.

PRICE .. 3D.
PER POST, .. 4D.

MAY 15, 1866.

1st & 15th
OF EACH MONTH.

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ILLUSTRATION:

NEW APPROACH TO CITY HALL, DUBLIN.

Contracts.

NOTICE TO BUILDERS.

ECCLESIASTICAL COMMISSIONERS
FOR IRELAND, on or before the 18th day of May, 1866,
will receive Proposals for
ALTERATIONS PROPOSED TO BE DONE IN THE
CHURCH OF

CURRIN Co. Monaghan.
FOR REPAIRING THE CHURCHES OF
GLENDERMOTT Co. Derry.
TAMLAGHTARD Co. Derry.
AND FOR REPAIRING AND PAINTING EXTERNALLY
THE CHURCH OF

SLAVIN Co. Fermanagh.
According to the Plans and Specification, to be seen in the
hands of the resident Ministers of the Parishes.

The lowest Proposal will not necessarily be accepted.
Each Proposal to be forwarded sealed, prepaid, and ad-
dressed thus:—

"Proposal for the Church of
"The Ecclesiastical Commissioners for Ireland, Dublin."

NOTICE TO BUILDERS.

ECCLESIASTICAL COMMISSIONERS
FOR IRELAND, on or before the 1st day of June, 1866,
will receive Proposals for
ENLARGING THE CHURCH OF

St. John's (Newport) Co. Tipperary.
According to the Plans and Specification, to be seen in the
Office of the Ecclesiastical Commissioners for one week up to
the 19th of May, 1866, and afterwards in the hands of the
resident Minister of the Parish.

The lowest Proposal will not necessarily be accepted.
Each Proposal to be forwarded sealed, prepaid, and ad-
dressed thus:—

"Proposal for Enlarging the Church of St. John's, Newport,
"The Ecclesiastical Commissioners for Ireland, Dublin."

TO CONTRACTORS.

TENDERS REQUIRED FOR HEATING DOWN LUNATIC
ASYLUM.

TENDERS are invited from competent Per-
sons for HEATING the above Building, in accordance
with the conditions prescribed, which can be seen at the Office
of the Architect, HENRY SMYTH, Esq., Downpatrick.
The Tenders are to be sent to R. M. ARDAGH, Esq., Office of
Control, Dublin Castle, on or before the 21st day of May next,
endorsed "Tender for Heating Down Lunatic Asylum."
The lowest or any Tender not necessarily accepted.
April 20th, 1866.

BOARD OF PUBLIC WORKS.

NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be
received up to the hour of 12 o'clock, noon, on the 6th of
JUNE, 1866, for BUILDING

A COAST GUARD STATION, consisting
of Houses to accommodate one Chief Officer, one Chief
Boatman, and Four Men, a Watch Tower, Store and Boat-
house, at BLACKSOD BAY, COUNTY MAYO, according to
Plans and Specification to be seen at this Office, and on appli-
cation to the Inspecting Chief Officer of Coast Guard at Bel-
mullet.

Each Proposal is to be for a lump sum, but must be accom-
panied by a separate Detailed Estimate giving Quantities and
Prices, and be endorsed "Tender for Blacksod Bay Coast
Guard Station."

Both Tender and Detailed Estimate should bear the Name
and Address of the Proposer on the back.

Printed Forms for Tenders can be had at this Office, or from
the Coast Guard Officer at Belmullet.

N.B.—Persons Tendering should send in Testimonials as to
character and competency, unless previously known to the
Board.

By Order of the Board,

EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 7th May, 1866.

* If this be not attended to, the Board cannot return de-
tailed quantities to the unsuccessful parties

MAYO PRISON.

TENDERS will be received by me on or
before Friday, the 1st day of June next, for the Execu-
tion of Alterations and Additional Buildings, &c., required for
carrying out the separate system in Mayo Prison, according to
a Plan and Specification to be seen in the Prison Office.

The Contractor will be required to enter into a bond with
two sufficient sureties for the due performance of his contract,
and to commence the work without delay.

The Tenders will be opened and decided upon by the Board
of Superintendence on Saturday, the 2nd day of June next.

JOHN C. LARMINIE, Local Inspector.
Castletbar, 5th Sept., 1865.

TO BUILDERS.

PROPOSALS will be received for the Erection
of a New National Bank House, and Out Offices, at Rath-
keale, Co. Limerick. The plans and specification for same
can be seen at the office of the Architect, WILLIAM F. CALD-
BECK, Esq., 24 Harcourt-street, Dublin.

Tenders for the work to be sent on or before Thursday, the
24th May next, addressed to M. J. POWER, Esq., Secretary,
the National Bank, 13, Old Broad-street, London, E.C.

The directors do not bind themselves to accept the lowest
or any of the Tenders.

Office hours, from Ten to Five o'clock.
April 30th, 1866.

SAINT MARY'S CATHOLIC CHURCH, RATHKEALE.
TO BUILDERS.

ESTIMATES will be received from compe-
tent Builders for the ERECTION of the NEW CHURCH
of ST. MARY, RATHKEALE, Co. Limerick, according to
Plans and Specifications, to be seen at the Office of Mr. J. J.
MCARTHY, Architect, 183, Great Brunswick-street, Dublin.

Tenders to be forwarded to the Very Rev. James O'Shea,
P.P., Rathkeale, County Limerick, on or before the 1st June
next.

The lowest or any Tender will not necessarily be accepted
on the above day.

Rathkeale, 16th April, 1866.

SHEEPHOUSE LIMESTONE QUARRIES,
DROGHEDA.

FOR Samples of the above Stone, the
Proprietors direct the attention of ARCHITECTS and
BUILDERS to the New Union Bank, College Green, Dublin,
the Lime Stone Dressings of which were prepared and fur-
nished exclusively from this Establishment.

For Prices, &c., apply to

A. & N. HAMMOND.

Sheephouse Quarries, or Office, John-street, DROGHEDA.

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DUBLIN. The Proprietor is now prepared to let on
lease several judiciously planned Sites for Villas in the above
beautifully situated Grounds, which have been planted and
laid out—regardless of expense, and in the best taste—for the
purpose.

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Occupies a well-chosen, elevated position on the south side of
the road near Belgrave-square, convenient to Seapoint, Monks-
town, and Blackrock Railway Stations, and commanding a
good aspect, and extensive Mountain and Wooded Scenery.

The roads and main sewers have been constructed in the
best possible manner, and with all modern improvements.

Application to be made to—MR. ALFRED G. JONES, 3, Moles-
worth-street, Architect, where a Lithographed Plan can be
seen, and all necessary particulars and conditions ascertained;
or to Mr. WILLIAM FRY, Solicitor, 13, Lower Mount-street,
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VERY DESIRABLE SITE FOR BUILD-

ING.—To be Let, for such terms as shall be agreed
upon, for the Building of not more than two Villas, about
Twenty Statute Acres of the LANDS of SHANGANAGH, in
the immediate vicinity of St. James's Church, Crinkin, and
about ten minutes' walk from the Shankill Station on the
Dublin and Wicklow Railway. The Ground commands
beautiful views of the sea and mountain, is furnished with
ornamental timber, and protected on the north and north-east
by the plantations of Shanganagh Demesne. Apply to P. C.
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Solicitors, 44, Upper Mount-street, Dublin.

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Arch of the Old Derry Bridge. The Bell, including air pumps,
is in perfect working order, and has been in use only about
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Derry, 3rd May, 1866. A. H. STEWART, Secretary.

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DUBLIN.

Price 4d.; or free by post for six stamps.

THE O'CONNELL MONUMENT: A

Pamphlet. By The M'ANASPIE. Containing a review
of the different Designs exhibited in the City Hall, with the
names and prior works and marks of distinction of the different
Exhibitors.

Also author of the Pamphlet on the Iniquity of the present
mode of levying the general taxation of these countries on the
consumer, and collecting it from two items, which is the pro-
ducer, and monopoly of trades and trade, and their bad effects
on the industry, prosperity, peace, and contentment of the
people, and the permanent stability of the empire at large.

31, GREAT BRUNSWICK-STREET, DUBLIN.

BUILDING MATERIALS—Timber, Deals,
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BATH STONE OFFICE, CORSHAM, WILTS.
DUBLIN DEPOT, 70, SIR JOHN ROGERSON'S QUAY.

BATH STONE OF BEST QUALITY.**PICTOR & SONS, Quarry Owners and Stone Merchants, Bath.**

Corsham Down, Box Ground, Farleigh Down, and Combe Down Stone.

List of Prices at the Quarries and Depots, also Cost of Transit to all parts of the Kingdom, forwarded on application to the
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THOMAS HENSHAW & CO.,

WHOLESALE & RETAIL FURNISHING AND BUILDERS' IRONMONGERS
AND GENERAL HARDWARE MERCHANTS,

5, CHRIST CHURCH PLACE, AND 15 AND 16, KENNEDY'S-LANE,

BE^G to call attention to their extensive, varied, and well-selected Stock of Ironmongery in all its different branches. It consists of Parlour, Drawing-room, and Bed-room Grates; Kitchen Ranges, Sash Weights; Iron Rim, Mortise, and Stock Locks; Hinges of all descriptions; Wrought and Cut Nails, O. G. Gutters, Down Pipes and Fittings, Metal Skylights, Ventilating Bricks; Cast-iron Chimney-pieces, with and without Grates; Rabbit Traps, Fox Traps, Galvanized Wire Netting, Sheet and Perforated Zinc, Sink Traps, Furnace Doors and Frames, Hot Air and Plan Stoves, Cast-steel Digging and Manure Forks, Slashing Hooks, Rakes, Spades, Shovels and Hoes.

Manufacturing and General Ironmongers and Tool Warehouse—81, MIDDLE ABBEY-STREET.
Spade, Shovel, and Tool Works—CLONSKEAGH.

Agents for Perry's Patent Fire-proof-Safes quality considered, they are the cheapest in the market. Builders are invited to inspect our Stock previous purchasing, at

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KITCHEN RANGES, with high pressure Boilers for Steaming or Bath purposes; Galvanized Iron Roofing, and Fencing Wire, best quality.

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Prices, 20s. 25s. 30s.

HYAM'S SUMMER WIMBLEDON JACKETS,

Greater Favourites than ever.
Prices, 15s. 20s. 25s. 30s.

HYAM'S SUMMER DENMARK JACKETS,

In a variety of Materials.
Prices, 15s. 20s. 25s. 30s.

HYAM'S SUMMER TWEED SUITS,

In New and Fashionable Designs.
Prices, 35s. 42s. 45s. 52s.

HYAM'S SUMMER YACHTING JACKETS,

Suitable for all purposes.
Prices, 20s. 25s. 30s.

HYAM'S SUMMER TROUSERS,

In New and Fashionable Fabrics,
Prices, 10s. 12s. 6d. 14s. 17s. 21s.

HYAM'S SUMMER TROUSERS AND VESTS, Alike,

In a great variety of Fancy Tweeds.
Prices, 15s. 18s. 6d. 20s. 25s. 30s.

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To prevent mistakes and disappointment, it is particularly requested that all parties make sure that they are at No. 30, DAME-STREET, this being the only Establishment B. HYAM has in Dublin.

B. HYAM,
CLOTHIER TAILOR, HATTER, & OUTFITTER,
30, DAME-STREET, DUBLIN.

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EDWARD ROUNDS,

HOUSE PAINTER, DECORATOR, AND ROOMPAPER MANUFACTURER,
5, HENRY-STREET, DUBLIN.
The Trade liberally dealt with.

TO CONTRACTORS, WHARFINGERS, &c.
THE BATHSTONE COMPANY (Limited)
are desirous of negotiating with a respectable, well-connected firm with a view to the establishment of a DEPOT in Ireland for the sale of their Bath Stone on Commission.
ADDRESS—E. A. TUCKER, SECRETARY,
4, RAILWAY-PLACE, BATH.

This engraving represents the patent Stable Fittings adopted by His Royal Highness the Prince of Wales for the new Stables at Sandringham.



MUSGRAVE'S PATENT STABLE AND HARNESS FITTINGS.
MUSGRAVE'S PATENT HARMLESS LOOSE BOXES.
MUSGRAVE'S PATENT IRON COW STALLS & PIGGERIES.

Gentlemen who cannot inspect these fittings are requested to write for engravings, as they are unlike those of any other maker, and were admitted to excel all the work of their class in the Exhibition.

They can be seen in first-class stables in almost every county in England; and MUSGRAVE, BROTHERS, are now fitting several very large establishments under direction of London architects, noted for employing only what is the best of its kind.

MUSGRAVE, BROTHERS, are the only Irish firm in their department of manufactures who received the Prize Medal of the International Exhibition and of the Royal Agricultural Society of England; and the acknowledged excellence of their productions has given to their House a speciality and importance not possessed by any other, and caused them to be resorted to from England and Scotland by Architects and others who have learnt their ability to execute really reliable Work on moderate terms.

FOR PARTICULARS ADDRESS—

MUSGRAVE, BROTHERS, Ann-street Iron Works, Belfast.

THE INTERNATIONAL EXHIBITION PRIZE MEDAL, AWARDED 1862; ALSO THE DUBLIN MEDAL, 1865.

ESTABLISHED 1744.

AUSTIN'S IMPERIAL PATENT SASH AND BLIND LINES,

TO BUILDERS, CARPENTERS, UPHOLSTERERS, AND BLIND MAKERS.

J. AUSTIN and SON, Manufacturers of the above articles, particularly wish to direct the attention of the Trade to their

IMPERIAL PATENT FLAX SASH-LINES,

of which they are now making four qualities, and they strongly recommend that in all cases they should be purchased in preference to the PATENT LINE made from Jute, which article has neither the STRENGTH nor the DURABILITY of FLAX, consequently cannot give so much satisfaction to the consumer. They also invite the particular attention of Upholsterers and Blind Makers to their improved Patent Blind Lines, which are very much superior to anything yet offered to the Trade.

They can be obtained of all Rope-makers, Ironmongers, Merchants, Factors, and Wholesale Houses in Town and Country.

**THE CONTINENTAL MARBLE COMPANY.**

IN consequence of the Metropolitan Railway having taken their old Premises, have removed to

7, WILSON-STREET, FINSBURY, E.C.,

Where Architects, Builders, &c., will find the largest Stock of Marble Chimney Pieces and Register Stoves in London.

MARBLE CHIMNEY PIECE & REGISTER STOVE, £1 6s. 6d.

A LIBERAL COMMISSION ALLOWED TO THE TRADE.

The Dublin Builder.

VOL. VIII.—No. 154.

ART TRADES IN IRELAND.



O deal honestly and earnestly with the present state in Ireland of the arts subsidiary to architecture, is to come in collision with many prejudices deeply rooted, and provoke a certain amount of unpopularity.

He whose duty—and pleasure—it is to meet the workman daily face to face, and invade the mysteries of his trade, knows how sensitively is held the doctrine of ‘Ireland for the Irish,’ or what might be called the ‘fortification’ of native industry. The workman as a general rule has an apprehension that there is a tendency on the part of architects and others to disregard the claims of native talent, which is considered—and in one sense with justice—to be capable of great things, to ‘send work out of the country,’ as the daily phrase is. Now this is not so, we can assure the workman. On the contrary, we believe there is not a single employer of art workmen among us, artist enough to appreciate every branch of art-manufacture, who is not Irishman enough to feel the deepest interest in its native existence. We beg of Irish art-workmen—of our fellow workman to take from us some unpalatable truths in good temper, and if possible to divest himself of prejudice and believe them. The state of all the arts subsidiary to architecture is with us behind that of other countries by several years. If we could once convince our art-workman of this we know that his natural pride would soon lead him to stifle the boastful clamour about native talent which trades’-agitators raise for him. Prominently among these arts the state of architectural sculpture, of wood and stone carving generally, forces itself on our notice. This is perhaps the least backward of all our trades; but is it native? Some years ago a great work, most important in its influence on the arts in this country, was erected under the auspices of the late Mr. Woodward and Mr. Thomas N. Deane. We refer to the Trinity College Museum. To this remarkable building and this alone we trace the inauguration of the great revolution in public taste which has since taken place. The sculpture there we believe we owe to ‘native talent,’ and in its style there has been little better done since anywhere; but has the trade subsequently been carried forward by native hands exclusively, and would it be in its present tolerably creditable state if it had been? We are familiar with a good deal of grand talk about the ‘inspiration of the book of Nature,’ which is all very well so far as it goes. The flowers of the field will supply us with natural types of endless variety and marvellous beauty, but, for good art at least, a trained mind must be brought to bear to conventionalize this beauty and apply it. He then who shuts his eyes to all that his brother worker has done before him in this way, is a fool; and where, we ask, would an exclusively native school of sculptors have had the opportunity of studying all this in a country barren

of examples—only rich in inferior ones. To the necessities of the age we owe the infusion of foreign blood—if English blood may be so called—which we have gladly welcomed, and to which we will yet owe, we believe, a flourishing Irish school of wood and stone carving in the future. This will apply,—once our inferiority is admitted as it should honestly be,—to most of the other arts: to metal working for instance. Let us have no more of the wearisome cry about ‘sending work out of the country,’ for the present at least until we have imported and placed before our workers some good examples of what the rest of the world has done and is doing. Where a handicraft is backward, as metal working is with us, it is unjust and tyrannical to the architect, who knows what good work is, to ask him to spoil his good designs by inferior accessories. If we are met with a flat contradiction as to the inferiority of our work, as we are prepared to be, we will be driven to quote examples. Take a simple one: two railings standing near each other in Sackville-street, both good though simple. One, in front of the late Colonial Assurance office, is perhaps as good smith’s work as Dublin could produce, the other, in front of the Messrs. Gilbey’s warehouse, by Skidmore, is perhaps as good as could be produced elsewhere. Would anyone think for one instant of claiming equal merit for both. In metal working most especially it is the *handling* of the workman which gives or takes away the greater part of its value. We had until lately no examples of good work in Dublin for reference. If anyone would desire to refer to an example of what may be achieved by good honest smith work misapplied through ignorance and want of taste, we would refer him to a pretentious and distressing screen railing in front of St. James’ Church, in James’-street.

The stucco plasterer, perhaps, of all other trades, demands our most earnest care. From a condition of excellence which no other contemporary trade enjoyed in the age of architectural darkness, it has sunk—we must tell hard truths—to the lowest stage of degradation. It should not be so. Gothic purists may sneer at plaster work and call it a sham. We are as great sticklers for truth of construction as anyone, but we assert that art in plaster is no sham of necessity, and must be recognised as one of the chief subsidiary arts. It has existence in a constructional necessity. Ceilings and other parts of a building must be covered with plaster, and why, in the name of common sense, is the plasterer to be debarred from decorating and ennobling his work if he does so legitimately, and does not aspire to make his plaster look like some other material. The history of this trade in Dublin is curious. A hundred years ago under Gandon and the Smiths it achieved a marvellous perfection; marvellous when the chilling influences of contemporary art are considered. The ceiling of the chapel of the Lying-in Hospital, of the chapel of the Royal Hospital, of scores of dignified old mansions in half-neglected streets, of every Georgian church, look down reproachfully on us wherever we turn. It is everywhere, this noble work; its profusion is marvellous; sometimes misapplied under the curse of a feeble barren school of architecture, but always in endless variety, and generally speaking exquisitely refined in conception. This success, we ascribe to one thing, its having been treated on true principles. Moulding or casting carried to extreme has been the degradation of plaster, but it cannot be ignored. These old workers cast many of their details—leaves, fruit, flowers, but they cleaned them carefully with the tool, modelled a portion on

the ceiling with the hand, and fixed their cast portions as fancy suggested. This is the true way to work with plaster, and to this we should return. To say that the art is lost is downright nonsense. We have had the pleasure to prove the contrary with the aid of a skilful working plasterer not too prejudiced to strike into new or forgotten paths, and earnest in the advance of his handicraft. The difficulty to be encountered immediately is to educate a school of modellers skilful in natural and conventionalized foliage. This seems altogether in the future, but the architect who will devote himself to it, may do much to produce work good so far as it goes, by leading the plasterer into modelling such simple forms as demand no great knowledge of natural foliage, and thus lead him to see the true principles on which disposition of ornament is founded. Architects too should pay a better price for good enrichment where it is wanted, and dispense with it in other places; but by all means let us have what we may have, good.

The cabinet-maker we do not feel very hopeful about—we must tell these unpleasant truths—and he is the most prejudiced and obstinate of all his brethren. He will neither lead nor drive. He has been so long accustomed to rule the roast in public taste, that, here at least, he does not see that the temper of the age will not have him irresponsible. He is viciously wedded to the glue-pot, to veneering and all the flimsy traditions of his trade. When he professes to carry out an architect’s design he produces but a travesty of it. When he condescends to ‘bring out’ some ‘novelty’ for an exhibition or his window, it is sure to be—and more especially when intended to be Gothic—an outrage on good taste and painful to look at. Furniture good in design is not a thing wholly unknown, but until the cabinet-maker consigns his designing to the hands of some one more competent than his shop-foreman or himself we will never have well-designed furniture.

The decorator in color has yet much to achieve. There is no dearth of skilful hands, but there is of ancient examples, more especially of Gothic character. Glass-painting we need hardly touch on. Though good windows are produced in Dublin, anyone who knows its condition will scarcely claim it as an Irish art. But one handicraft remains to be noticed—the plumber. ‘What,’ our readers will say, ‘the plumber among art-workmen!’ that prosaic but useful tradesman. Ere now the plumber has done good service in art-work, and may yet do so we trust. If he has in later times so immersed himself in W.C.s and such utilitarian production as to have no soul for anything else, we do not despair of seeing him yet, under fostering, hands produce marvels of ingenuity in trunk heads, roof flashings, crockets, and so forth, for which his facile material is well adapted.

And, the art-workman may ask us, have we no word of censure for anyone but him. We have for certain architects who do not their duty by their art, who are too shallow to know and appreciate each art, who perhaps may be classified as of the ‘helpless’ school. These are men who pile up for us feeble arch mouldings over incongruous piers and write between them the comprehensive word ‘carving,’ and then accept from Heaven and the stone-carver whatever the latter may in his fancy think fit to give them, without regard to style, age, or fitness. For the metal-worker their instructions will be probably a few scrawls in blue ink on a timid elevation, over which will be found inscribed—“ornamental iron ballustrade,”—and by such devices does the helpless architect consider he decently shirks further responsi-

bility. With these helpless architects lies the chief cause of our indifferent art-work. Architects must lead the way, but our workmen must follow in a patient, unprejudiced spirit, striving to learn what they can from strangers' work imported, with a desire to rival it. Native industry is not healthfully encouraged when it is indulged and petted in its mediocrity and prejudice.

ROYAL IRISH ACADEMY.

A GENERAL meeting of the members of this body was held on Monday evening,

Sir WILLIAM WILDE, V.P., in the chair.

The Secretary read the minutes of last meeting, which were approved of, and called on the members elected at the previous meeting to sign the roll of the Academy.

The first paper read was one by the Rev. J. H. Jellett, "On a fluid possessing opposite rotating powers for the rays at opposite ends of the spectrum."

Sir William Wilde read a letter written by Edward, fourth Earl of Meath—

"Dublin, Thomas-court, July the 5th ('90)

"MADAM,—Yesterday morning I entered this town after our army and King James had a smart battle for four of five hours on this side the Boyne, both our whole armies being very warmly engaged. It happened on the 1st of July, about eleven in the morning, when King William forced the pass on the River Boyne, called Oldbridge, three miles from Drogheda (in person), under the enemies great guns and ours, with small shot-like showers of leaden hail-stones. King William, viewing the enemy's camp the day before the engagement, was shot with an eight pounder, which took off his coat off his shoulders, and just drew blood from his skin. He called for a napkin and another coat, and after it was settled upon him he stretched out his arm three times, and said, without the least passion—"The enemy designed to prevent his fighting next day, but certainly I'll be to-morrow amongst the thickest of them." He was just to his word, for the next day he fought through the pass, and with loss on both sides he took the battery of the enemy's great guns, and killed all the small shot men that endeavoured to retain it. Soon after he charged the enemy in the rear, broke their first lines, and our other line being in the front of theirs; we drew up to enclose the enemy's whole army, but a (?) deep bog being between, we could not soon pass it, which gave them time to run for it, and, the night drawing near, we did not pursue till next morning, and then it was too late; but well enough, for they fled to Duhlin, and made short stay there, for King James, Tyrconnell, &c., flew through the County of Wicklow, in order, as I suppose, to take shipping at the first port where they can find vessels to transport them. We killed, besides prisoners, between six and seven thousand. Most of their best officers lay dead and gasping upon the ground. We lost Duke Schomberg, killed in the neck with a musket ball, and some few officers and soldiers, inconsiderable for such an engagement. The enemy is so dispersed, and threw away their arms and run westward, that there is no danger of their ever rallying again, so that you may be pleased with the event of a few hours fighting, which brings you all home to your safe interests and properties, which I desire may be for my own sake as well as yours as soon as you can. My service to the family of Hobs and Nobs, and your sally stakes are once again freely at your service, who am, madam, your humble servant,—(Signed) MEATH.

"Pray let Matt Anderson and all our friends partake of truth. We took Lieutenant-General Hamilton prisoner, who, I believe, will soon be executed. I am sent for to the camp near Glasnevin, and can add no more particulars at present."

Mr. Jellett's paper was referred to council for publication.

A vote of thanks was proposed by Sir W. R. Wilde, and seconded by Mr. Gilbert, to Sir G. Hodgson, Bt., for having permitted the foregoing letter to be laid before the Academy.

The next paper, by the Rev. James Byrne, "On the Science of Language," was read by Dr. Ingram, F.T.C.D., for the author, who was unavoidably absent.

Mr. W. H. Harding proposed that the above paper should be published, as it was one containing several new and highly vigorous views on the science of language. Agreed to.

The following members were balloted for and admitted:—John Barrington, Esq., D.L.; William Frazer, Esq., and John Casey, Esq., A.B.

After the transaction of some private business, the Academy adjourned.

LIVERPOOL ARCHITECTURAL SOCIETY.

AT the fortnightly meeting on Wednesday evening, Mr. J. A. P. Macbride read a paper on "Sculpture in connexion with Architecture," in which he contended that sculpture was the art-voice of architecture, instancing as a failure in this respect the sculpture in the pediment of St. George's Hall. Its incongruity reminded one of that frightful example of the Dutch limner's picture, wherein he represented the Children of Israel crossing the Red Sea with fixed bayonets. The late William Spence, sculptor, positively informed him that Mr. Cockerell made the design for Mr. John Foster, intending it for the tympanum of the pediment of the Liverpool Custom House. There it would have been in capital keeping; in St. George's Hall it was out of place, and an enduring incongruity. Referring to the lions, Mr. Macbride asked, could any gentleman tell him what was the business there of those continually sneezing, yet sleepy-looking sentinels? One thing could be boldly advanced in their favor. If not ornamental they were certainly useful, for they had by their comically grave aspect provoked many a hearty laugh from hundreds of thousands, nay millions, of people, as they walked into Lime-st. from the railway-station. He suggested that they should be placed on the gate piers of the projected Stanley and Sefton Parks. Many a time and oft had Mr. Councillor Picton done good service to Liverpool, but he never did a truer or better thing than when the other day he opposed the erection of the Prince Consort Equestrian Statue on the ground at the east front of St. George's Hall. A more preposterous notion than the erection of such a work on such a site he (Mr. Macbride) never heard of. The building would go far to kill the statue, and the statue the building. He hoped the society would, as a body, implore the Town Council not to commit such a folly.

SANITARY PRECAUTIONS.

It is wise at all times to measure, as far as possible, the nature and extent of approaching evils, in order that we may be the better prepared either to mitigate their force, or to subdue them wholly. No invading foe, however formidable in numbers and remorseless in conquest, can strike greater terror into the heart of a nation than the approach of cholera, while the very panic inseparable from it, often tends to weaken the decision with which it should be confronted. The previous encroachments of the epidemic did not find us in such an efficient state of preparation as the terrible nature of the visitation paramourly demanded. Though we were not taken altogether unawares, as if the enemy had come to our doors at night while we slept, we had fallen far short of the requirements of the time, and the universal testimony of medical men is to the effect that an immense amount of mortality might have been averted by a special observance of sanitary regulations. To be forewarned is not always to be forearmed—nor does the imminence of danger necessarily imply a determination to confront the enemy at the gates. In the majority of overwhelming calamities, the multitude seem to remain inert, one looking at another in prostrate helplessness. At the present moment there is manifestly a disposition on the part of the general public to centre an inordinate hope in governmental action, whether imperial or local, with regard to the advent of cholera—a delusion that cannot be too sharply dispelled. In calling attention to the last Order in Council, which will be found in another page, we would urge our readers to endeavour to consider its various provisions as addressed to themselves individually, rather than to the constituted authorities alone. While it is necessary that the authorities should occupy the foremost place in bringing into operation the machinery entrusted to their control for the subjugation of the epidemic, so far as that result can be attained by mere human agency, every household will be expected to discharge a duty not less onerous than that imposed upon them, by the purification of his premises to the fullest extent, and by prompt compliance with any instructions which they may issue. A world of wisdom is embodied in the familiar phrase, that "cleanliness is next to godliness,"—words that merit a universal recognition, and that should instantly be translated into action, if, indeed, we are not prepared to sink down in criminal supineness before the inroads of pestilence. In a recent issue we sought to enforce the importance of vigorous, immediate, and united action in the sanitary movement inaugurated by the Government, carefully abstaining from any statement needlessly calculated to augment alarm; and we would now remark that, unfortunately, additional reasons exist for the adoption of that course. It would be downright folly to attempt to conceal from ourselves the fact that cholera continues to make progress in Liverpool, which is in direct communication with

Newry and Dundalk. Before the expiration of a week—nay, this very day—the epidemic may appear in both towns. Have we taken full advantage of the brief time allowed us for the work of disinfection, the cleansing of nooks and corners in which filth is invariably found, and the removal of putrid animal and vegetable matter? Simple as it may appear, this is a question of tremendous import—veritably a question of life or death. To slender purpose will our local bodies have issued stringent orders and general instructions if the entire population is not found in hearty co-operation with them. One sweltering heap of dung may send pestilence throughout an extensive neighbourhood. One person of nasty habits may be instrumental in bringing desolation into a hundred homes. In visitations of this nature it is impossible to exaggerate the consequences of individual carelessness. The inseparable membership of the various component elements of a community are never more forcibly illustrated than in the extension of an epidemic. The householder who will persist in keeping his back-yard in a foul condition in spite of every remonstrance, asserting his right "to do what he likes with his own," is the tangible auxiliary of cholera, a living and moving nuisance which ought to be suppressed at any cost or inconvenience. Argument after argument might be adduced to show the vital urgency of personal cleanliness, when we are threatened with the return of an epidemic which has hurried into the grave our dearest relatives and friends. But apart from ordinary sanitary appliances, there is another matter which should not be excluded from consideration—namely, a strict adherence to temperance both in eating and drinking, and especially the latter. The confirmed toper can offer but feeble resistance to an attack of cholera, and brandy—a potent medicine for the sober in the early stages of the disease—is, we are informed, of little use to a stomach enfeebled by debauch, and half perforated by the continuous application of alcohol.—*Newry Telegraph*.

THE CHOLERA.

THE following are the regulations agreed upon at a Privy Council meeting on the 7th inst.

1. That, in case of any vessel arriving in any port of the United Kingdom having such disease on board, no person shall land from such vessel for the space of three clear days after her arrival, without the permission of the local authority.

2. The local authority shall forthwith cause all persons on board the said vessel, to be examined by a physician or surgeon, and shall permit all such persons to land immediately, who shall be certified by such physician or surgeon to be free from such disease.

3. All persons certified by such physician or surgeon, to be affected with symptoms of such disease shall be removed, if their condition admits of it, to some hospital or place to be designated for such purpose by the local authority; and no person so removed shall quit such hospital or place until some physician shall have certified that such person is free from the said disease.

4. In the event of any death from cholera taking place on board of such vessel, the body shall be taken out to sea, and committed to the deep, properly loaded, to prevent its rising.

5. The clothing and bedding of all persons who shall have died or had an attack of cholera on board such vessel during her voyage, either at any foreign port or on shore at such port, or on her passage to the United Kingdom, shall be disinfected, or (if necessary) destroyed under the direction of an officer of the Customs.

6. The local authority, for the purposes of this order, shall be the Local Board of Health where there is such local Board; and in any corporation where there is no such local Board, the local authority shall be the Town Council of such corporation.

7. All persons offending against this order shall be liable to such penalties as are imposed by the said Act of Parliament upon persons offending against the provisions thereof.

At the annual meeting of the London Art Union (Professor Donaldson in the chair), a strong opinion having been expressed that the production of a chromolithograph, to be received by every subscriber for a certain year would be generally satisfactory, the Council have commissioned Mr. Vincent Brooks to execute Mulready's well known picture, "Choosing the Wedding Gown," in 34 stones. In other words, such example would pass through the press 34 times. The association have purchased the copyright of Mr. MacLise's great works. "The meeting of Wellington and Blucher after the Battle of Waterloo," and "The Death of Nelson," and arrangements have been made to engrave these pictures in the highest style of art for general distribution amongst the subscribers.

THE CURRAGH OF KILDARE.*

It has been a frequent cause of complaint with the investigators of Irish Manuscripts, that they contain little or no reference to the original establishment of the Curragh of Kildare as a theatre, or common, for the celebration of national games, sports, and pastimes; and no allusion whatever to its having been allocated, at any period, to the performance of the mystic rites of the Druidical religion. The presumption that it was ever devoted, either in whole or in part, to the latter purpose, rests on very slight evidence, as we shall see; but that it was allocated to the former practice—nay, has continued to be so for the space of at least 2,000 years—is very certain. The obscurity which surrounds the origin of all monuments belonging to the prehistoric period necessarily attaches to the ancient history of the Curragh. We know at least as much regarding it as the English know respecting the monuments of Stanton Drew and Stonehenge—the latter of which is asserted by some of the early English Chroniclers to have been transferred thither from the “plains” of Kildare. But of its use, the race of men who erected it, or the date of its erection, notwithstanding the theory of its Saxon origin, which has lately occupied much attention, the people of Great Britain “know as much,” remarks a recent writer, “as they do of the solid framework of the globe itself.” And yet English history has had the benefit of such elucidation as Cæsar and Tacitus were able to afford. The works of their older historians—Gildas, Bede, and Neunius—also remain to the English, whilst our most ancient books of history are irretrievably lost.—(See O’Curry’s *Lectures*, p. 20, for a formidable list of the Irish MSS. which have disappeared).

The oldest *written* reference to the Curragh of Kildare that I have been able to find, is a very brief one, contained in an ancient MS. called the “*Liber Hymnorum*,” preserved in the Library of Trinity College, Dublin, and which is believed to have been transcribed in the tenth century, from a much older volume. It occurs in the celebrated Hymn in praise of St. Brigid, which professes to have been composed by St. Brogan Claen, from a prose narrative given to him by his master, St. Ultan, of Ardbraccan, in Meath. The latter died in the year A.D. 656, at a very great age, and it may be safely assumed that St. Brogan’s Hymn was composed not long after the year 600. It has been published by Colgan (*Trias Thaumaturga*), and contains internal evidence, if other testimony was wanting, of its antiquity. The *Martyrology of Donegal*, in noticing the festival of St. Ultan, at September 4, states “It was he that collected the miracles of St. Brigid into one book, and gave them to Brogan Clean, his disciple, and commanded him to turn them into verse, so that it was the latter that composed [the hymn], as it is found in the ‘Book of Hymns.’” The reference is contained in the line “*Ἡ Ἐπίκλης περὶ τοῦ Κurrech*,” i.e., “the nun who races over the Currech (or Curragh).” The scholiast, in a contemporary gloss on the word “Currech,” says “*Currech, a cursu equorum dictus est.*” Dr. Todd, who has quoted this gloss in his edition of the *Book of Hymns* (p. 67), remarks that this is “a curious proof of the antiquity of its use as a racecourse;”

“to which,” he adds, “perhaps some allusion may be intended in the description of St. Brigid as ‘the nun who *drives* over the Currech.’” If the word *reidhed* had been translated “races,” instead of “drives,” Dr. Todd’s suggestion would doubtless have been advanced with more confidence.

The next reference to the Curragh, in the order of *date*, is contained in the ancient philological tract called *Cormac’s Glossary* (in Irish, *Sanasán Chormaic*), the authorship of which is ascribed to Cormac Mac Cuilleinan, Archbishop and King of Cashel, who was slain in the battle of Ballaghmoon, in the south of the county of Kildare, A.D. 908. This work, which is undoubtedly one of the most genuine fragments of ancient Irish literature that has descended to our times, has been edited by Mr. Whitley Stokes, from a MS. of the fourteenth century, in the collection of the Royal Irish Academy; but a fragment of it is preserved in the *Book of Leinster*, a MS. in Trinity College, written about the year 1150. There is also a portion of this tract in a MS. in the Bodleian Library, Oxford, transcribed in the year 1453, and a valuable copy in Trinity College of the early part of the fifteenth century. We cannot at present claim to possess Cormac’s autograph copy of the work, but Mr. Stokes, who has examined with critical exactness the historical arguments for and against Cormac’s authorship, admits that if absolute authority is wanting to prove that the tract was composed by Cormac himself, the internal evidence is such as to convince competent judges that it must have been originally written, if not in Cormac’s time, within a century thereafter at most.

In this glossary the word *Currech*, or Curragh, occurs twice, and is thus explained, viz.:—

1. “*Κυρρετς*, i.e. *a cursu*, i.e. *περὶ τοῦ Κυρρετς*, i.e. *κορρετς* *περὶ τοῦ ἁγίου*,” which, translated, reads “*Currech*, i.e. *a cursu*, i.e. running (or racing); *Currech*, indeed, is applied to a Sheskin (morass), viz., cranes (*κορρετς*) frequent it.” In O’Davoran’s “*Irish Glossary*,” compiled in 1569, and also published by Mr. Stokes, “*Currach*” is explained “*Corr-iath*, i.e. *ἡ γῆ ἢ κορρ*” (*corr-iath*, i.e. the land of the herons). Here it may be noticed that O’Davoran apparently substitutes the word *iath* (land) for the syllable *ach*, or *acha* of Cormac’s word, which latter, though properly signifying “a field,” has sometimes the more extended meaning of “land” or “territory;” Ireland, for instance, being occasionally called, in old Irish MSS. *Ἀχάτς Ἀγῖτς*, “the land,” or territory “of Art,” father of Cormac Mac Art. The anonymous author of a curious Latin poem in the possession of Lord Talbot de Malahide, written in the seventeenth century, an extract from which may be seen in Mr. Gilbert’s “*Hist. of Irish Viceroy*,” derives the name of the Curragh “*a fessis equis*” “from tired horses”—as if it were compounded of *κορρετς* (pron. *corra*) “tired,” and *each*, “a horse.”

2. Cormac again has “*Κυρρετς*, i.e. *a curribus*, i.e. *ἡ ἐπὶ καρραγῖτς*,” which means, “Curragh, i.e. a curribus, viz., contest of chariots.” The word “*ἡ ἐπὶ*” is also glossed “*οἰμε*,” ablative of “*οἶα*,”—swift, vehement; and the explanation of Cormac, therefore, plainly points to chariot races.

Now it cannot, I think, be doubted that in furnishing an explanation of the word Curragh, and deriving it from running

or racing, the compiler of this glossary, whom I will venture to believe was Cormac MacCuilleinan, had the Curragh of Kildare in view; for although there are countless places in Ireland bearing the name of Curragh, singly or in compound, to which the description “crane land” applies, or may have applied, there is no other place so called to which the derivation *a curribus* can be held to be applicable. Cormac must have known the Curragh of Kildare well. He lost his life almost within sight of its green slopes; and the battle which proved fatal to him is asserted to have been caused by a dispute with the Monarch of Ireland, Flaun Sionna, regarding the right of presentation to the neighbouring church of Monasterevan. Moreover, the Curragh of Kildare never was a sheskin, or morass. It was not a sheskin in 484, when St. Bridgid founded her establishment on its border, or for centuries anterior thereto. It was not a marsh in 705, when the Irish monarch Conghal, after devastating Leinster, apostrophized the Curragh as “the plain of the beautiful sward,” in stanzas preserved by the Four Masters; nor was it a marsh in the seventh century, when it was the scene of a great battle, nor in the twelfth century, when Giraldus Cambrensis praised its fertility.

Cormac’s second derivation of the name of Curragh, “*a curribus*,” which he explains by “*ἡ ἐπὶ καρραγῖτς*,” or “chariot contests,” suggests the inference that chariot-racing preceded simple horse-racing in this country—an inference which is highly probable. The very ancient MS. known as *Leabhar-na-h-Uidhre*, now in the Academy’s collection, contains a remarkably valuable historical tale called “*Toghlail Bruidhen Da-Derga*,” or the “demolition of the mansion of Da-Derga,” a Leinster chieftain who dwelt in the valley through which the river Dodder flows, about three miles above Tallaght. The late Professor O’Curry, in describing this tract, observes that “its composition must be referred to a period of very remote antiquity, the style of the construction and language being more ancient even than the *Tain-bó-Chailgne* (which is generally regarded as the oldest Irish tale); and of a character,” he adds, “totally beyond the power of ordinary Irish scholars to reduce to anything like a correct translation.” I myself entertain the belief that the *Bruidhen Da-Derga* is, perhaps, the oldest Irish text now remaining. The phraseology betrays no indication of the existence of Christianity in Ireland at the time of its composition. It professes to give an account of the destruction, by a band of pirates, of Da-Derga’s *Bruidhen*, or mansion (the name of which is supposed to be still preserved in that of the village called “Boher-na-breena,” or “the road of the mansion”), and the murder of the Irish monarch, Conary Mór, whose death Roderick O’Flaherty refers to the year A.D. 60. I allude to this old tale because it represents Conary as having on one occasion gone with four chariots, to his “*clujche*,” or games, to the Curragh: “*ἡ ἔφρι*,” as the expression is. The “*cluiche*” comprised all kinds of games, sports, and exercises anciently performed at the *Ἀεναχ*, i.e. fair, or assembly—whether convened on the occasion of a national festival, the accession of a king, or for the purpose of holding the *Ἀεναχ* *zubha*, “fair of sorrow,” or funeral rites, of some deceased chieftain. But

* Read before Royal Irish Academy, 26th February, 1866, by Mr. W. M. Hennessy.

in either case the inevitable "races," or "ḡḡḡḡḡḡ," formed a conspicuous element in the celebration.

At the period to which I refer, namely, the middle of the first century, and during at least 200 years subsequently, chariot races would seem to have been the system of racing in vogue. Nay, from the existing records, the chariot would appear to have then constituted the universal means of locomotion in this country. The explanation of this may be found in the fact, if such it is, stated in *Leabhar-na-h-Uidhre* (fol. 68, aa), that there was neither ditch, fence, nor stone wall erected in Ireland before the reign of the sons of Aedh Sláine (circa 660), but that the land was all in level tracts; and that fences then became necessary as boundaries, owing to the multiplicity of houses. The erection of fences would, of course, tend to diminish the usefulness of the kind of chariots then in use, which we may well believe, notwithstanding the glowing description left to us of the chariot of Cuchullain, to have been little better than the

"*Tardaque Eleusinae matris volentia plaustra*" of the Roman husbandman. Be that as it may, when we come to the time of Cormac Mac Art, and the genuine Fenians, that is to say, about the year 260, we find the chariot races apparently superseded by horse-racing; for whereas in our accounts of the true epic period of Irish history—terminated by the so-called Attacotic rebellion in A.D. 90—chariot races only are mentioned, the stories of the Fian, and pieces of more genuine history represent horse-races as the delight of kings and chieftains; and whilst Conor Mac Nessa and the heroes of the *Craebh Ruaidh*, or "Red Branch," are praised for the number and beauty of their chariots, Finn Mac Cumhail and his friends are complimented on the symmetry and fleetness of their steeds.

The evidences on this point are numerous, but I shall only adduce one piece, and this simply as bearing on the subject more immediately under consideration. The oldest specimen of Ossianic poetry with which I am acquainted is a poem contained in the *Book of Leinster*, a twelfth century MS. in Trinity College Library, in which Ossian laments his blindness, and expresses his regret that he cannot enjoy the *Aenach*, or Assembly of the Liffey, i.e. of the Curragh, which he represents as having been inaugurated on the occasion by the King of Leinster. Then he narrates a visit which he paid, in his younger days, with his father Finn, to the Assembly of *Aenach Clochair*, now Mainister-an-enagh, near Croom, in the county of Limerick, where horse-races, or "ḡḡḡḡḡḡ" were got up in honour of Finn's visit. Thence they proceeded, adds the poem, to Tragh Beremhain, probably the ancient name of Ballyeigh strand, in Kerry, where another horse-race took place, and where, indeed, the good old practice is still kept up. The copy of this poem which we now possess, is, of course, not more than 700 years old; but who can fix the age of the original from which it was then transcribed into the *Book of Leinster*? The statement that the public games celebrated on the Curragh were inaugurated by the king, can be supported by many references of a similar kind. Indeed the office of presiding over such assemblies was part of the duty of a king, according to the Brehon Laws; and there are not a few entries in our annals

where a king is said to have been killed by a fall from his horse at an *Aenach*. This is also further confirmed by a clause in the well-known testament called the "Will of Cathair-Mór, King of Leinster," and subsequently Monarch of Ireland, who died about the year 174, who bequeaths to his son Crimthann, amongst other bequests, "the leadership of the games of the Province of Leinster," which I take to mean the games of the Curragh. This remarkable document has been published in the *Book of Rights* by Dr. O'Donovan, who observes in the preface, that it must have been written some centuries after Cathair's time; but O'Flaherty treats it as a document contemporaneous with the testator; and it is evident that the copy which the learned author of *Ogygia* possessed was more ancient than O'Donovan's texts, as the clause in which Cathair bequeaths to his son Crimthann, "Potestas, qua ludorum præfectus per Lageniam erat constitutus," is not found in the later copies.

There is another very ancient poem contained in the *Book of Leinster*, in praise of St. Bridget, the various kings of Leinster, and the more important places in it, including the Curragh. The author's name is unfortunately not given; but I have little doubt that it is the composition of one Orthanach, another of whose productions is also preserved in the same MS., although in vol. 5 of the Academy's proceedings, page 171, it is stated that no mention of this writer occurs in any known document except in an Irish MS. in the Bodleian Library. There are two persons of name mentioned in the "Annals of the Four Masters"—Orthanach of Cill-Foibrich, or Kilbrew, in Meath, whose obit is given at the year 809, and Orthanach, Bishop of Kildare, who died in 839. I think the latter, who in the Bodleian MS. is called "Orthanach of the Curragh of Kildare," was certainly the author of this poem, as it manifestly appears to be the production of an ecclesiastic, and to have been written before the year 835, when St. Bridget's remains were transferred for safety to Downpatrick, as the writer expressly refers to Kildare as her *Ruaim*, or place of sepulture.

The author apostrophizes St. Bridget, salutes her as the princess of the men of Leinster, and states that although to her then belonged the plain of the Liffey, which he afterwards refers to as the Curragh, yet before her time it belonged to all in succession:

"ḡḡḡḡ ḡḡḡḡ ḡḡḡḡ ḡḡḡḡ ḡḡḡḡ
Ro bo ḡḡḡḡ cagh ar ḡḡḡḡ,"

which I understand as signifying that it was a common before the time that the people of Kildare came to regard it as the appanage of their patroness, from which period it has undoubtedly continued to be so.

After enumerating some of the kings who reigned over the Curragh—i.e., over Leinster, the poet adds—

"ḡḡḡḡḡḡ ḡḡḡḡḡḡ ḡḡḡḡ ḡḡḡḡ
ḡḡ ḡḡḡḡ ḡḡḡḡ ḡḡ ḡḡḡḡ ḡḡḡḡ."

"The Curragh, with its beauty, remains;
But there lives no king who was over it."

The verdure of its sward, and the shouts of its assemblies are also mentioned, as well as the curious condition which seems to have been imposed by custom on any celebrated stranger visiting the Curragh, which consisted in his having to perform a "cog," turn, or circuit round it. From this word "cog," or circuit, some persons

might be inclined to derive the name of "Curragh"—and I find that the old road leading from the Priory, or graveyard, of Kildare, towards the Curragh, is still called *Bohereen-na-geor*, or "the little road of the turns" (or circuits); but until we have some more ancient authority than Brogan Claen, or Cormac, we must adhere to the latter's definition. Local tradition assigns the honour of making the Curragh a common to St. Brigid, who is represented as having received from the King of Leinster, for removing a deformity under which he laboured, as much land as her mantle would cover; and it is added that but for a rent made in the garment, through the avarice of one of her female companions, the entire surface of Ireland would have been embraced in its folds. There is no reference to this alleged grant in any of her lives. In most of them, however, she is stated to have had pastures there, to which she never prevented the neighbouring people sending their cattle. Both history and tradition here plainly point to the fact of the Curragh having been a common from the year 484, when Brigid founded her little church of wattles beside the old oak of *Druim Craidh* ("Ridge of Clay"), as Kildare was anciently called. It is probable, also, that St. Brigid did not interfere with the races, whatever may have been the case as regards the other Pagan celebrations, for although she is represented by her biographers as "never for one moment diverting her attention from holy contemplation, but in constant converse with God by meditation in heart and mind," her ancient lives prove that she was not averse from riding in her chariot over the Curragh, or opposed to the exercise of legitimate amusement being practised there; and indeed the "ḡḡḡḡ," or "green," formed an adjunct to the old church or monastery, as well as to the *Dán*, or residence of the chieftain. Nor were the races discountenanced, apparently, by her successors, some of whom are occasionally dignified by their biographers with the agnomen "Cuirrethach," or "the racing," as the Abbot Cobhthach, who died in the year 868, and a fragment of whose elegy is preserved by the Four Masters, in which he is called "Cobthach Cuirrethach Cuirrethach"—i.e., "the racing Cobhthach (or Coffey) of the Curragh." Besides, we have it on record that kings were sometimes accompanied by the "chiefs of the clergy and laity," when celebrating the *Aenach*, or games.

It appears from the most ancient Irish MSS. that from a very remote period every province in Ireland possessed an *Aenach*, "fair green," or arena, where the men of the province, old and young, assembled annually, under the leadership of the king, to celebrate their festival games. And such was the regularity with which these celebrations were held, that whenever intermitted on account of wars or other inevitable causes, the Annalists deplore the circumstance in feeling terms. In the old list of Irish Triads, contained in a stave of the *Book of Lecan* (which by some mischance has got inserted into the vellum MS. classed H 2, 17, in Trinity College Library), the three great *Aenachs* of Ireland are stated to have been *Aenach Croghan*, in Connaught; *Aenach Taillten*, in Meath; and *Aenach Colmain*, or the fair of the Curragh. The green of Croghan, in Roscommon, was frequented by the people of the trans-Shannon district; that of Taillten, or Teltown, in Meath, in which

Tara, the ancient seat of the Irish monarchy is situated, was the principal place of assembly for *Leath Chluinn*, Conn's half, or the northern part of Ireland, and the Curragh served for the southern half, called *Leath Mogha*, and probably for the whole country. I may observe that the games of Taillten, or Teltown, continued to be celebrated, every first of August, down to the end of the twelfth century. Even from that period hurling, wrestling, and other manly sports were annually carried on there up to a recent date; and the Hill of Lloyd races may possibly be a relic of the ancient practice. In addition to these principal places, each sub-territory had also its special arena. The men of northern Ulster assembled at Emania, now the Navan fort, near Armagh. The tribes about the now county of Limerick congregated to *Aenach Clochair*, now Monaster-an-enaigh, near Croom. The inhabitants of Hy-Kinsellagh, or Southern Leinster, met at Loch Garman, or Wexford, and the place where they enjoyed their games is still called the *Faitche*, or Fathy, i.e. "fair green" of Wexford. The green of Cashel is also celebrated in history, as well as that of *Aenach Urmumham*, or the *Aenach* of Ormond; from which word *Aenach*, or *An Aenach*, the name of Nenagh is derived.

The dates at which all these places were founded—except the Curragh—are given, and range from some centuries before the Christian era to A.D. 400. But no reference to the exact period when the Curragh was established as the Irish Olympic theatre is to be found in our MS. remains. Dr. O'Donovan, who devoted much attention to the elucidation of its history, was only enabled to conclude that it was a plain from the most remote age. However, it seems to have been used as a national arena in the century before Christ, when Art, son of Mesdelmond, fixed his residence on Dun Ailind, or Knock Allen, on its eastern border, to which an old road, still traceable, led through the Curragh. The ancient tract called the Dinnsenchus, originally compiled in the sixth century, of which we have a copy in the *Book of Leinster*, contains a poem on the erection of *Dun Ailind*, or *Knock Allen*, in which occur the lines:

"Αἰλινδὸν ἀενάχῃ τῶν αἰρὶ νοστῶν
Βασιτὶς Ἀλφρεῖ κοινῇ μὲν ποταμῶν."

"Ailind, place of assembly for our youths—
Rath of Art, with its royal roads."

There is no doubt, I think, that the celebrity here claimed for *Ailind*, as a Place of Assembly, or *Nundina*, is borrowed from the character of the Curragh which stretched before it, as Knock Allen is too steep to have ever served as a place for the celebration of the games appropriate to an *Aenach*.

The places of Public Assembly, as I have remarked, were generally confined to the inhabitants of the respective districts; but it would seem that the Curragh was frequented by people from all parts of Ireland. Thus Conary Mór and his companions who belonged to the northern division, are represented as having attended its games.

We have it on very ancient authority that two centuries later the promiscuous band of Fiinn was in the habit of participating in the sports. The *Book of Munster*, as preserved in the *Book of Lecan*, states that Fiacha Fídh-gheinte, ancestor of the O'Donovans and others chief families of Munster, and who lived in the fourth century, obtained the surname "*Fídh-gheinte*,"

which means "wood-maker," "*quia fecit equum ligneum in Circino Colmani, in Campo Liphii*." The explanation may appear fanciful, and suspiciously suggestive of Epeus and the Trojan horse; but it nevertheless implies that the writer knew the men of Munster were admissible to the sports of the Curragh. Again, at the year 825, the Annals record the destruction of *Aenach Colmain*, i.e. the Assembly of the Curragh, by Muiredhach, King of Leinster, against the south Leinstermen, on which occasion many were slain. South Leinster was at that time, and had been for 600 years previously, a distinct kingdom, and had its own place of assembly at Loch Garman or Wexford. Its people are stated to have celebrated the Curragh games also on other occasions without interruption; and the contention in 825 may have been owing to their having dispensed with the usual inauguration by the local sovereign, as the disturbance of a fair, without weighty reasons, was severely punished under the Brehon Laws. In the year 954 also Congalach, Monarch of Ireland, is recorded to have proceeded into Leinster, and held the "fair of the Liffey," or Curragh, for three days, and although the Leinstermen did not interfere with the celebration, Congalach, at their instigation, was intercepted by the Danes of Dublin, on his return home, and slain at *Ailen-tighe-Giughrain*, which was very likely the ancient name of Inchicore, near Dublin. Hence it would appear that all comers were free to make use of the Curragh for the purposes to which it was adapted.

It is not necessary to the object of this paper to refer to the many occasions on which the Curragh of Kildare was the theatre of more hostile assemblies. Situated almost on the boundary of the warlike kingdoms of Meath, Leinster, and Offaly, it formed a convenient battle-ground for rival armies. Neither shall I detain the Academy in attempting to define the character, or origin, of the Tumuli with which its long ridge is dotted, and which not being ramparted, are supposed not to have been used for purposes of residence, but as places of interment. I have seen it nowhere suggested that they may have probably served as sites from which chieftains witnessed the celebration of the national sports.

The fame of the Curragh as a druidic establishment does not rest on a very strong foundation. Moore, in his History of Ireland (vol. i., p. 28), has given currency to the statement. "One of the old English traditions respecting Stonehenge," he says, "is, that the stones were transported thither from Ireland, having been brought to the latter country by giants from the extremity of Africa; and in the time of Giraldus Cambrensis there was still to be seen, as he tells, on the plain of Kildare, an immense monument of stones, corresponding exactly in appearance and construction with that of Stonehenge." Giraldus, however, does not say that the monument was there in his time, but that there was in ancient times a stupendous pile on the plains of Kildare, near Naas, and that "certain stones," "*quidam lapides*," exactly resembling the rest, were there in his time; and although it has been supposed that the "*Nasensi*" of Giraldus was a misreading of "*Darensi*" or "*Darensis*," as Kildare is usually latinized, it is likely that "*Nasensi*" is right and that by placing the locality close to Naas, Giraldus meant either the enormous pillars still remaining at For-naught, or perhaps those at Punchestown.

But the account which Giraldus gives of the removal of the Stonehenge monument from

Ireland, is copied from the *Historia Britonum* of Geoffrey of Monmouth, who represents Uther Pendragon as having come over here, by the advice of Merlin, and transported the monument from the mountain of Killaraus (probably the hill of For-naught) after having defeated Gillomanus, who then reigned in Ireland. As an instance of the untruthfulness of Geoffrey's statement, I may observe, what Mr. Charles Halliday was the first to notice, that the word Gilla, "*servus*," or "*puer*," is not found in the composition of any Irish proper name prior to the advent of the Danes, from whom it was probably borrowed; and no name beginning with "Gilla" appears in the Irish Annals before the end of the ninth century.

Writing of Kildare, Giraldus observes, "in this neighbourhood there are some very beautiful meadows, called 'Brigid's pastures,' in which no plough is ever suffered to turn a furrow. Respecting these meadows it is held as a miracle, that although all the cattle in the province should graze the herbage from morning till night, the next day the grass would be as luxuriant as ever.

"Cropt in a summer's day by herds, the dew's
Refreshing moisture verdure still renews."

It is to be regretted that this excessive fertility does not still characterize the Curragh, which is locally called "the short grass," and the young men of Kildare are known as "the boys of the short grass."

The Curragh seems also to have been regarded by the Anglo-Normans as a common pasture, and Mr. Gilbert, in his valuable History of the Irish Viceroy (p. 510), has published a curious Parliamentary decree of the year 1299, in which it is expressly so called:—"Inhibitum est, sicut antiquitas fieri consuevit, quod porci de cætero non pascant in Coraghts de Kildare, quod est communis pastura, et in solio Domini Regis. Et vicecomes puniat illos qui porcos suos fugent vel habeant ibi fodientes vel pascentes, prius per finem, et postea per amissionem porcorum illorum, et gravius si sæpius sic delinquant."

Among the Ordnance Survey papers in the collection of the Academy is preserved a curious tract called a "Descriptive Account of the county of Kildare," drawn up for Sir Wm. Petty, by a Mr. Thomas Monk, in the time of the seventeenth Earl of Kildare, and therefore between the years 1660 and 1664; in which the Curragh is thus referred to:—

"Near the centre of this county is the Curragh of Kildare, a large spacious plaine, and common to all the adjacent neighbourhood, who find it a rich and commodious, as well as healthful pasturage, especially for sheep that bear a fine staple, and the finest flesh of any in the kingdom—it being thronged with flocks all the year round. It is about nine miles in compasse, and together with the adjoyneinge grounds, is reckoned one of the most pleasant sytes these kingdoms anywhere can shew: the easie assents yielding noble and various prospects, and the gentle declineings give content to the wearied traveller, as well as recreate and please the gentiele horsman and keeper; it being a place naturally addapted to pleasure, and its vicinity to Dublin—being but 17 miles distance—occasions that hither repairs the Lord Lieutenant, or Chiefe Governor, when His Majestie's important affaires will admit leisure to unbend, and slacken from trying cares. Hither are also seen to come all the nobility and gentry of the kingdome, that either pretende to love, or delight in hawking and hunting, or racing, for in this clearer and finer aire, the falcon goes to a higher pitch, or mount, soe as often to be scarce visible; the hounds enjoy the scent more freely, and

the courser, in his swift carrear, is less sensible of pressure or opposition than other wherc."

A few years previously also, i.e. in 1657, the Commissioners appointed to carry out the Act of Settlement returned the Curragh as a pasturage common to various towns, although in the reigns of James I. and Charles I. the right of pasturage thereon was granted to certain patentees; but it would seem that these grants were re-grants of rights previously forfeited.

It remains to say a word as to the extent of the Curragh. It comprises at present 4850 acres; but it seems likely that it was anciently much more extensive. Dr. O'Donovan and others have been of opinion that the Curragh extended to the river Liffey on the eastern side, as it is referred to in the ancient records as being *ar bru Lifé*, i.e. "on the brink of the Liffey." But the expression *ar bru Lifé* is only relatively used, in the same way as Glasnevin is described in the *Martyrology of Donegal* (p. 272), as "*for bru abhainn Lifé*," "on the brink of the river Liffey," although it is much farther from the river than the present eastern limits of the Curragh. It is very probable, however, that the Curragh extended in another direction as far as the town of Kildare. St. Brogan asserts in his hymn that St. Brigid built her establishment in a plain, "*in campo extruxit suam civitatem*." There are many notices in her lives, implying that the land in immediate contiguity to her church was a plain. This is also supported by a scholium at the 1st of February, in the *Festology of Aengus*, the Culdee, a copy of which is preserved in a twelfth century MS. in the Bodleian Library, which represents the saint's cows as having on one occasion given so much milk that the surplus, after filling all the pails, formed the lake called *Loch Lemnachta*, or "New Milk Lake," to the north of the place. The lake in question is probably the small sheet of water now called Loch Minnaun, or the Lake of the Kids, lying a few perches to the north-west of Kildare, and as it is represented as having been in or near "Brigid's pastures," it may have probably been within the ancient limits of the Curragh.

I may close the present paper with the following accurate translation of the extract published in Mr. Gilbert's *Viceroy's*, of the Latin poem in the possession of Lord Talbot de Malahide, to which I have already referred. The translation is by my respected friend, D. H. Kelly, Esq., of Castle Kelly:—

"Where soars the ancient Tower of Kildare,
Amidst the stars, and leaves in 'tis kindred heaven
Its trace, a place there is most passing fair;
And near 't, a level plain of many an acre,
Which coult'er ne'er, nor oxen with curved share
Have into furrows riven; there no dykes
Have e'er been cut; no brushwood rises there;
No stone stands, planted as an ancient landmark;
No bound'ries here to point out separate fields.
In common past'rage open lies the land,
Nor hedge, nor ditch is there—all, all is free!
If here Denialion, to renew man's race,
Sought st'ones to cast behind him, vain his task!
Nor in this plain could Pyrrha flints have found,
To supersede, how vain! the female sex.
So far around, this plain, on every side,
No eye of human being can descry
Its limit—the great stones upon its confines
So far asunder stand! One likeness has it,
And only one, which in the least comes near it—
The calm blue sea, O Eolus, which stands
By any breeze or breath of thine unruffled.
Its name, from wearied steeds, the Curragh takes—
A name of yore in tongue vernacular given,
But which in Greek is called an Hippodrome—
Because this plain on every side's cut up
By the tired hoofs of 'th' Geraldines, when there
That martial race, exulting, exercise
Their steeds, and try their mettle—thus to test
Which fleetest is, ere entering for the Stakes."

In conclusion, I have to regret that the references to the Curragh are so few and fragmentary, that the most diligent search has not enabled me to present to the Academy a more specific account of its history and antiquities than the present imperfect sketch.

ALTERATIONS TO THE CITY HALL ENTRANCE.

THESE alterations, of which we give an illustration, are now about to be carried into execution, after having been under the consideration of the Corporation for a considerable time. Many of our readers will recollect that a premium was offered by the Corporation for the best design for improving the present inconvenient access to our City Hall, when, after due deliberation, it was awarded to Mr. Turner, who is now engaged in carrying out the work.

Owing to the rapid fall of the ground, and the limited space available in front of the building, it presented some awkward points to be dealt with; but, as our illustration will show, these have in a great measure been satisfactorily overcome. The front presents the appearance of a terrace wall, behind which are the steps leading to a spacious landing (protected in front by an open balustrade of convenient height) from which again start the remainder of the steps to the portico.

The surface exposed by the removal of the present steps, as well as all the new work, is to be of Portland stone.

On the pedestals, on which stand the lamps, are panels with the arms of the city, and it is intended that the gates shall be embellished in a similar manner.

REFORM WITHOUT PARLIAMENT.

How many of our building artisans are in the possession of the franchise as occupying leaseholders or freeholders? We have not the same opportunities as the Chancellor of the Exchequer to enable us to ascertain accurately the answer to the query, but our own knowledge assures us that the proportion must be very small indeed; that if freemen-artizans be deducted there are scarcely any of the class who have votes; and yet without any lowering of the franchise it is in the power of every workman who is able-bodied, intelligent, and well conducted to become possessed of the franchise. The silent progress of events, by lowering the purchasing power of the pound, has conferred the franchise on them as a class. There are few of them whose rent is lower than four shillings per week, or £10 5s. per annum, which brings them within the qualification required by law; and they are not voters only from their own faulty custom. They have become habitually room-keepers—a word too familiarly associated in this city with the adjectives "sick and indigent." Half the families in this great city are room-keepers. We need not point out all that the word implies: the neglected and filthy common hall and staircase—the miasmatic back yard, and the unutterable horrors which generally crowd the basement. For our present purpose we leave these by, and dwell only on the point that houses so occupied are reduced so low in the valuation—are looked upon in so degraded a light that, while the workman's rent paid should place his name on the franchise rolls, the place in which he pays it excludes him from them; and we do not think there is any grievance in this. Nothing compels him to continue in occupation of such a home. Like many of his betters he may be forced, at the beginning of his career to take up his quarters in a lodging-house; his continuing to do so is his own choosing; he has it in his power, by a very moderate exercise of self-denial, to place himself and his family in a separate house—his own property, or shortly to become so—where he will not have his comfort and decency compromised by the inevitable associations of a house let in tenevents; where his wife and children can be preserved from contact with the objectionable neighbours that the chances afforded by such huddling together of many families in one house present; and at the same time to place his name on the roll of electors of the city, and become thereby a unit in the government of the State; and there is a profit in this over and above that sort of profit which has been realized to such an extent recently in Galway, Totness, and other boroughs. This is a value not likely to be realized in Dublin with its enormous constituency; the value we refer to is the feeling of independence, dignity, and self-respect that the franchise holder

possesses; he is somebody—not a very great body, perhaps—but with an immense distance separating him from the nobody, the unit of the great unwashed who have no votes. We stated above that one half of the families in Dublin were roomkeepers;—we should have said even living in one room. It cannot be doubted that a large number of these, amounting in the whole to over 20,000, must belong to a class receiving now in weekly wages from 24s. to 30s. per week, and paying from 3s. to 4s. per week by way of rent. Now, there is not one of these families which might not be lodged in a house of its own without any expenditure, or if any, with only a very small expenditure beyond the sum now paid by them in rent. The means of doing this is afforded by the building societies now happily established in the city, and working very successfully, but not availed of by the class who have most occasion for the assistance afforded by their organization.

From the "Irish Civil Service and General" or the "Dublin" building societies, any member can procure an advance of £100, repayable in 15 years by payments of about 4s. 6d. per week; and with that sum, a separate house—a home in the best sense of the word—can be bought or built, and to the possession and occupation of the house the franchise will be attached, and an amount of decency and respectability that is absolutely cut off by the circumstances of the workman's present home.

We are not of the "bulls" or "bears" of the social exchange. We neither raise the working man to the heavens as the model of every practical virtue, nor do we, with others, find no room for virtue in his organization, and look on him as an embodiment of vice—reckless, thoughtless, mad, vice. The workman has much to tempt, much to discourage him; is very radical in some of his notions; passionately conservative in clinging to old ways and old habits. He is in all, a man and a citizen, and he will become a better man, and a citizen of more weight and importance, in proportion as he places himself and his family in a situation of comfort, independence, and separation from vice and squalor. He can do very little alone, but by associating himself with others in a discreet, safe manner, he can do very much; and there is no association at once so sound in its principles, so safe in its action, and so profitable in its results as that of the building society. It matters very little which one a man chooses to join; he ought to join one, if only as an investor. And the employers of labour in the city owe it as a solemn duty to the men who contribute their labour to the making of the profits of their trade, not to suppose that their duty is performed when they have paid the men their wages on Saturday night, but to urge them by advice and example to avail themselves of the advantages thus placed within their reach.

CORK CUVIERIAN SOCIETY.

THE eighth and last meeting of this Society for the session 1865-6 was held in the Library of the Cork Institution, on the 2nd inst.

MR. ROBERT DAY, jun., President, in the chair.

The President exhibited the following:—A large bowl-shaped ladle of one piece made of willow and found in a peat bog near Ballymena, Co. Antrim. A bronze-winged celt of the palstave variety with a loop at the side, found near Castle Island, Co. Kerry. A curious decade ring for the thumb of base silver with ten projections on the outer surface and a centre shield bearing a Roman cross. A massive silver posy ring. On the inner surface is engraved the motto "Feare God Only." A plain gold ring of a similar kind, so much worn that only part of the sentence "Love all," can be traced. A bronze finger ring from Ballymoney, of rude workmanship. A silver puzzle, of four parts, which when placed together in a certain way form a ring clasped by two hands; rings of this kind are termed gimmel or gimmel, the word appears to be derived from *gemelli*—twins—and applies to all rings having two hands clasped, though, correctly speaking, the name should only be applied to duplicate, triplicate, or quadruplicate rings, like this example, which may be disunited and thus become so many different pledges of faithfulness. A fine gold signet ring of last century work bearing the following crest: A stag's head proper couped at the neck. Shield. On a fess engrailed, or, three hunting horns between as many stags' heads. A gold nugget pin from the Montana Territory, U. S.

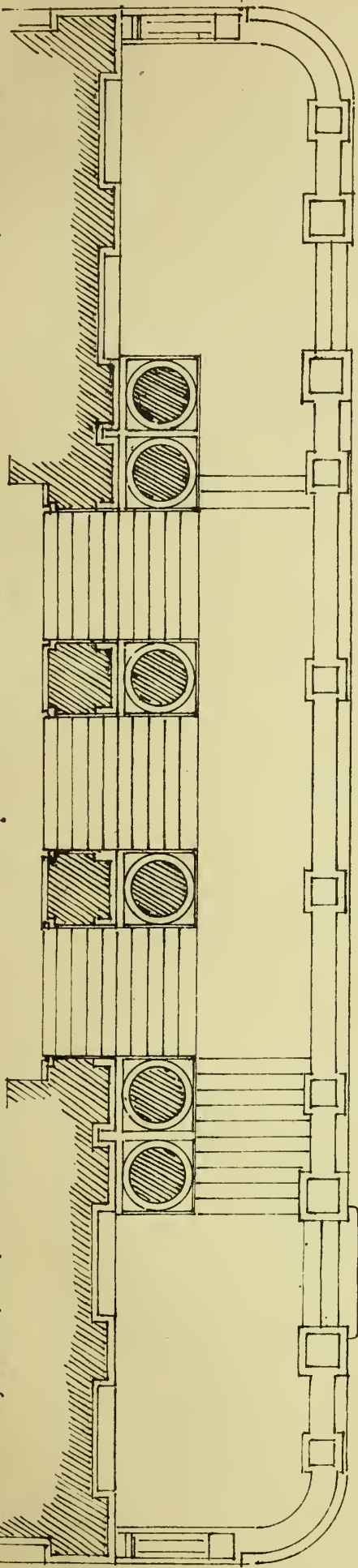
New Approach to

Thomas Turner Arch: &c

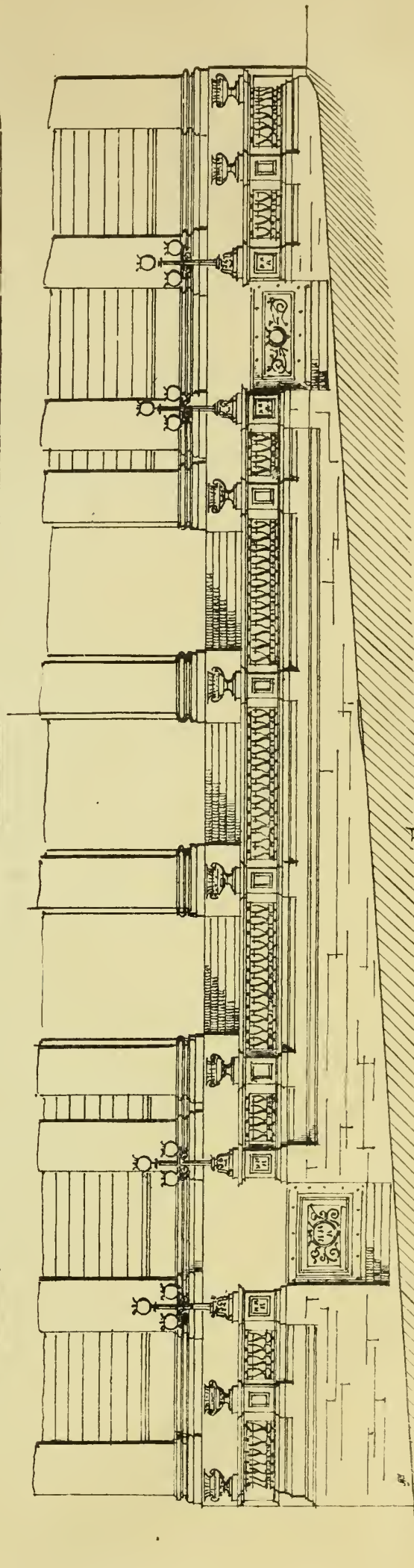
City Hall Dublin.

porch.

SCALE 10 FT. = 1 INCH.



plan.



Elevation.

THE LIBRARY
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UNIVERSITY OF ILLINOIS

America, and some specimens of gold dust, the only currency of that country.

Mr. R. R. Brash said—The stone circles of Grange are situated on a townland of the same name, and on that portion immediately adjoining Lough Gur, about three miles from Bruff in the County of Limerick. The largest and most perfect circle is situated close to the right hand side of the public road from Bruff to Limerick. It is one of the most perfect I have ever seen, and by far the largest. Its internal diameter is 150 feet, and the number of stones remaining *in situ* 65, varying in height from 2 to 11 feet, the majority, however, are of large size. One of those marked (A) on the accompanying ground plan measures 11 feet over ground in height, 7 feet wide, and 4 feet thick. A respectable and intelligent farmer in the locality informed me that it was 6 feet in the ground, which would make the whole height 17 feet. Several of the stones have been broken, as is evident by their fractured surfaces. A considerable number of the stones have been removed from this circle, as the numerous void spaces testify. Taking the average size of the remaining ones and the space they occupy, the original circle would have been formed by about 95 stones. These stones do not stand singly—they stand side by side, forming a continuous wall, outside of which is an earthen bank with an external slope. This earth-bank averages in width 5½ feet, and in height 9 feet above the general level of field, the surface of the inside of circle is about 5 feet above the level of external ground. A field fence runs through a portion of the circumference of the circle to the north, cutting away the bank, while some of the stones are embedded in the fence. In the adjoining field to the north are the remains of another circle, fully as large as the last, but of which only eleven stones now remain, the rest having been removed some twenty-seven years since by Edward Croker, Esq., and the surrounding bank levelled. The stones are on an average of the same size as those forming the circle already described. Partly in the same field and partly in an adjoining one is another circle of much smaller diameter than either of the others, but the stones, which are 15 in number, are of much greater size, and stand singly as monoliths. One of these, which now lies prostrate, measures 8 feet long, 8 feet wide, and 3 feet thick, and must weigh nearly 17 tons. These pillar stones are placed nearly equi-distant from each other, one being wanting to complete the circle. About 30 perches north-west of the last-named circle, on the ascent of the hill, is a fine pillar stone; it stands 11 feet in height above the surface of the ground, is 7 feet 6 inches in width, and 3 feet in thickness. Allowing it but 3 feet in the ground, it would weigh about 24 tons. It is probable that pillar stones and circles of them are the oldest monuments of primeval man remaining to us. The earliest notice of such remains are found in Holy Writ. . . . The custom of erecting great stones either singly or in groups in the circular form seems to have been universal. Such monuments are found in India, Tartary, Persia, and the countries bordering on the Caspian Sea, in Syria, Northern Africa, in the islands of the Mediterranean, the Crimea, Southern Russia, Sweden, Denmark, Germany, and the British isle. The object of the pillar stone was various. The special uses of the stone circle has been an object of much controversy among antiquaries; some have contended that they were temples for religious worship, others that they were burial-places; others again that they were places of public assembly. It will perhaps be nearer the truth to say, that the circle of stones has been used for each of these purposes. If they were exclusively places of worship why, as in the present instance, should three of them be placed quite close to each other? If, in the same way, they were places of public assembly the same question may be asked. That our Pagan ancestors had some form of religion and of religious worship must be admitted; that they have left no enclosed temples, in fact, no religious monuments after them, is equally certain; that the area of the stone circle may have been used for such a purpose is surely probable. The one I have been describing when perfect and complete must have been admirably adapted for such a purpose. The great area of 150 feet diameter, the great circle of huge, upright stones, the bank of earth with its broad, flat top, upon which the spectators could stand while the officiating priest within the sacred area offered up the sacrifices and performed augural rites. Again, such a place would suit for a public assembly for judicial purposes, for a House of Commons, where the affairs of the state were discussed in the presence of the people. There is no doubt that these circles were used for sepulchral purposes. In the centres of many of them stone cists have been found, containing funeral urns, and other evidences of their sepulchral character. Our Celtic ancestors had different modes of interment. In some cases they erected a stone built chamber or mausoleum. On the surface within this were placed the bodies of the dead, and over all they piled a tumulus of earth, some of them so large as to look like natural hills, and covering several

acres. Such monuments we have at New Grange, Dowth, Knowth, and Croham. In other cases the body was burned; the ashes were deposited in an urn of earthenware; the urn was placed in a stone cist or chamber beneath the surface, while round the spot were erected a circle of upright stones of greater or lesser magnitude, according to the dignity of the deceased, and the power or ability of the survivors. I will conclude this short paper by stating that there is, perhaps, no country of which we have any knowledge, which contains such a number of megalithic monuments as our own. Pillar stones, circles, cromlechs, diarmida and grafunes beds. Cashels are to be found in immense numbers through the country, even though the progress of civilization and agriculture has destroyed a vast proportion of them.

Mr. Brash's paper was illustrated by plans and sections of monuments.

Mr. R. Caulfield exhibited drawings of 22 merchants' marks, by which the goods constituting the cargo of the Peter and Paul, "the great hulke now lately arrived at Youghell" were identified. This ship was laden at Lisbon, bound for Rouen, and driven by stress of weather into the harbour of Youghal, in Nov., 1572. On her arrival these instructions were immediately forwarded by the Lord Deputy and Council to Sir John Perrot, Knt., Lord President of Munster, "to stay all the goods, wares, treasure, &c., to the same appertaining, and of the master, owner, mariners, &c., putting these men under safe custody till her Majesty's pleasure be further signified, also to call together twelve of the substantial persons of credit of the town of Youghal with all convenient speed to view the treasure and merchandise of said ship brought to land, and value the same, and perfect an inventory tripartate indented, and afterwards that all the goods be laid up in safety in fit cellarge in the town." The following letter from the Mayor of Cork, in connexion with this matter, will be read with interest. "To all Christian people, &c.—The Mayor, Recorder, and Aldermen of the city of Cork greeting. Whereas divers passengers, of divers nations, viz., Portugalls, Flemingis, &c., arrived at the harbour of Youghal, in a ship of Mercelles, called the Peter and Paul, amongst whom were two Italians, one Neapolitan, two Frenchmen, and one Englishman, who were brought from Youghal into Cork by order of Sir J. Perrot, Knt., Lord President of Munster, about 20th Dec. last, 1572. We certify that said passengers remained in our city, being placed in the alderman's houses and best rooms by said President's command, having the liberty of our city (one Lucas Velis excepted) for what cause we know not. In witness we have caused our Mayoralty seal to be affixed xviii April, 1573. John Water, Mayor of Cork; Andrew Skyddie, Recorder; John Gallwey and John Fagan, Bayliffs. Richard Terry, William Skyde, Edmund Goull, Will. Gallway, Will. Tirry." A note of such jewels and rings as were had in the ship named the Peter and Paul, which was stayed at Youghal, Ao. 1572. Imprimis, an emerald set in a ring, whereof the one of a reasonable bignes, the other worth x crowns, as appeareth by the merchants' letters, which rings I have given away, and will answer for them according the price. Item. Two emeralds unset, both given away; the price in the merchants' letter, as I remember, are thirtie crowns. Item. A topaz, rated in the merchants' letters at twenty crowns. Item. About cxx, as I remember, of small emeralds, the best of them not worth 11s. a piece. Item. Certain small raggs of rubies, the number I know not, but for the best of them I would not give above vid. Item. Two sapphires, in rings, not worth above vii. crownes, gold and all. Item. A rubie in a ring, worth three crownes. Item. V. rubies unset, not worth, one with another, five shillings the piece at the most. Item. XIV. pearls, worth about xiiid. a piece. Item. XI. other pearls, of evil colour and quite round; the price I know not now, but I have bought of Irish pearls sithence my coming for 11s. vid. the piece and more orieure (sic.) than the best of them are. Item. VIII. other stones unset of cates' eyes, sapphires, amethysts, jacinthes, and, I think, two opals, which is now worth, as I guess, above xii. crownes. Item. A little bag of garnets, which one John Derlay owner thereof, sold for iiiiid. the dozen. Item. A chain worth x. crowns, with a cross to it. Item. One other chain worth, as I now guess, iiii. li. Item. Two little rings of gold worth two crowns. Item. III. (XX)—xii. crowns of gold. This inventory is signed J. Perrot. The original is preserved amongst the Carte MSS. in the Bodleian Library, Oxford.

Mr. Joseph Wright said—Toward the close of last year I spent a few days examining a limestone cutting situated a little to the east of Rathkeale station, on the Limerick and Foynes railway. This cutting has of late become of interest to the palæontologist from the great variety of fossils found in the stone, but more especially on account of the discovery here by Mr. Galvin of plates of a new species of chiton, of unusually large dimensions, and which has been lately described by Mr. Bailly, under the name of

Chiton Thomondiensis. A list of these fossils is given in the explanation of sheet 153 Ordnance Survey. They number 63 species. During my short stay at Rathkeale I refund most of these fossils, besides adding 53 others, making a total of 116 species from this station. The most important additions were, of gasteropoda, *Pleurotomaria lipidus*, *P. fragilis*, and *Dentalium ingens*. Many fine examples of conchifera were collected; but the chief novelty was *Melœgrina quadrata*. Of brachiopoda, I found 33 species. I may mention the following:—*Terebratula vesicularis*, *Rhynchonella flexistria*, *Productus Wrightii* and *Crania quadrata*. But the greater novelty found was *Orthis antiquata*, the only other known example being the type specimen, figured by Professor Phillips in his "Geology of Yorkshire," thirty years ago, and now forming part of the Gilbertsonian collection in the British Museum. Several specimens were found of the little Entomostraca, *Cypripis subrecta* a crustacean not uncommon in the Carboniferous slate. Also a single example of the annelid *Spirorbis glabrus* and the coral *Zaphrentis Phillipsii*. In conclusion I may observe that this cutting near Rathkeale would amply repay a more careful search, for during my short visit no less than five species occurred new to Ireland, and one new to Britain.

TRADE STRIKES.

The managers of the Belfast and Dublin railway have refused to advance the wages of the men on strike. The men offered to return for 12s., but this was refused them. They have all been dismissed.

A strike has taken place among harge labourers in the employment of the Cork Harbour Commissioners. The nature of the demand cannot as yet be definitely ascertained, but it is believed that they want to be paid by the ton, and not as heretofore by weekly stipend. An idea can be formed of the number of hands out at present from the fleet of barges that are now lying idle—about a dozen—each of which used to require a complement of near fifty men. The wages received by these men were increased some time ago, when they were paid in sums ranging from 15s. downwards. Since the "turn out" the greater portion of the younger labourers have contrived to emigrate, and the demand for agricultural labour being now very great, has induced those who consider themselves not quite so fortunate as to go to America, to hire themselves as farm labourers at more remunerative wages than those given by the Commissioners.

A large number of the bricklayers' assistants, or "hodmen" are on strike in Belfast for advanced wages. They demand an advance of from 13s. to 18s. a-week. The masters have offered 16s., which the men refused.

The platelayers, printsmen, and gatemen at Portadown, Scarva, and Newry, struck for an increase of wages on the 30th ult., considering that their wages were less than those usually paid on other lines. It was expected that the guards and engine drivers would also strike.

The movement among the journeymen tailors of London, Edinburgh, and other places for an increase of wages has extended to Belfast, says the *Whig*. The wages have been at the rate of one guinea per week, though not based on a fixed weekly payment, but upon what is technically known in the trade as a "statement." There is a certain price for making each garment, and a certain time for its completion; and upon these two scales of price and time, the ordinary weekly wages earned by each hand amount, on the average, to the sum mentioned. The journeymen asked that the "statement" should be so altered in price as to increase their weekly earnings to £1 7s. The masters having considered the matter, agreed to the request of the men, the details to be left to the arbitration of a joint committee of masters and workmen. This is the rational way of settling disputes of the kind; and it has been found by recent experience elsewhere, in analogous cases, the plan most conducive to the interests of both parties, and we hope, for the sake of the men themselves, that they will see that by this mode they are likely much more practically to subserve their own permanent advantage than by resorting to "strikes," which, however they may terminate, are always attended with much in re mischievous results to the operative than the capitalist.

The Drogheda Waterworks have been tested by the contractor, Mr. John Ashcroft, in the presence of a number of the inhabitants, and result was perfectly satisfactory. One of the fire-plugs in Ship street was tried by a new hydrant manufactured for the purpose, to which was attached a new hose, which worked admirably. All the streams had not been allowed to flow in, yet the supply of water was abundant, and very pure. The works have been completed in eleven months.

IRISH ARCHITECTURE.*

THE ancient architecture of Ireland presents features not only peculiar, but also entirely distinct from those of other European nations. Insular position, and consequent immunity from foreign interference until the English invasion, A.D. 1152 (the Danes left only traces of their temporary military occupation in isolated localities), allowed the Irish to cultivate and perpetuate, to at least the eleventh century, a style peculiar to themselves, as well as uninfluenced by any foreign element.

Their earliest known constructions in stone are the chambers and passages of tumuli, and the fortifications called *CASHELS* or *DUNNS*. Some of the tumuli are of great size, as at New Grange, Dowth, and Knowth. They contain chambers of uncemented masonry, domed after the manner of the Grecian examples at Mycenæ and Orchomenus, but of ruder workmanship. Long passages covered with slabs of stone lead to the chambers. Similar constructions are also found in the numerous stone and earthen forts called *RATH*, *LIOS*, and *CATHAIR*, spread by hundreds over the face of the country; of which Staigue fort, near Kenmare, co. Kerry, is a good type. It is 88 ft. in diameter internally; the wall of uncemented rubble masonry is 13 ft. 5 ins. thick at the door level, 18 ft. high, capped by a projecting eave, and having a batter of 2 ft. 7 ins. on the external face. Internally the wall has ten flights of steps leading to the parapet, and crossing each other in the form of the letter X. The entrance doorway, 4 ft. 6 ins. wide, has a flat head and converging jambs. Chambers are formed in the thickness of the wall, which is surrounded by a ditch 26 ft. wide. The stones are flat and thin, but fitted together with the greatest care and nicety. Other remarkable fortresses are, Dun Aengus on Arranmore, at the entrance of Galway Bay, as also the fort of *AILECH*, co. Londonderry; the latter place is identified as the seat of the kings of Ulster several hundred years before the Christian era; its demolition is mentioned by the *FOUR MASTERS*, at A.D. 674. The *cashel* called *cathair Mac Lir*, co. Cork, is a fine specimen of uncemented masonry in its gateway, where the wall is 17 ft. thick; the sides of the entrance passage are faced with dressed stones accurately fitted, with horizontal beds, and the joints, both perpendicular and raking, are exceedingly close; the sides of the passage converge, and support a covering of large slabs.

Another primitive class of building is called *CLOCHANS*. They are usually circular on plan, from 9 to 20 ft. in diameter internally, the wall of uncemented masonry from 4 to 8 ft. thick, with a rude dome of stone on the overlaid principle; the entrance has always a horizontal head and inclined jambs. Though usually circular, some are square, elliptical, quadrantal, or analogous in form to the vesica piscis. These buildings, supposed to have been either store-houses or habitations, are principally found in the west of the counties of Cork, Kerry, Clare, Galway, and Mayo.

The round towers have been claimed by contending schools of antiquaries, either as Pagan or Christian structures. The peculiarities of style and construction, the difficulty of assigning the use, and the absence of all historical evidence as to their origin and era, have given wide scope for conjecture and theory; which have hitherto, however, left the vexed question undetermined. They are circular structures, varying from 7 to 9 ft. internal diameter; the walls from 3 ft. 6 ins. to 5 ft. in thickness at the base; the height from 70 ft. to 110 feet. Several examples afford evidence that they were finished with a conical roof or spirelet, springing from projecting eaves, and formed of stones overlapping each other. The doorways, which are generally flat headed, but sometimes semicircular, are placed at the height of from 6 ft. to 20 ft. from the ground. The windows are small, generally flat headed, though sometimes angular, and sometimes semicircular. The oldest and most perfect examples have four windows immediately under the eaves, facing the cardinal points, or nearly so. As a rule, however, all the openings have the jambs converging upwards like those in the stone forts, clochans, etc. All the towers are built of cemented masonry; but the character of the workmanship varies in different examples, from the coarsest spawled rubble, to the finest and most closely jointed ashlar, work. The same severe archaic type of architecture prevails throughout the details of all the existing towers, with the exception of the doorways at Kildare and at Timahoe, which various writers have declared to be insertions of a Romanesque character.

The ecclesiastical architecture may be divided into two periods—the primitive and mediæval. When the inhabitants were converted to Christianity by the native missionaries, they followed, in the erection of their churches, the ordinary style and mode of construction; and it was not until the lapse of several centuries, when defined styles sprang up in France

and Germany, and intercourse grew frequent between the Irish and continental churches, that Romanesque details were introduced. The primitive churches are small and simple rectangular buildings, varying in size from 12 ft. by 8 ft. to 40 ft. by 25 ft., examples of the larger dimensions being very rare; the walls, from 3 ft. to 4 ft. in thickness, seldom exceeded 14 ft. in height to the eaves; the side walls usually projected from 18 ins. to 2 feet beyond the gables at either end, in the manner of the classic antæ. Many existing examples of these buildings are roofed with stone, very highly pitched, with overlapping courses. Examples occur in the churches of S. Flannan and S. Molua, at Killaloe; in Cormac's chapel at *CASHEL*; in S. Kevin's kitchen at Glendaloch; in S. Columba's church at Kells, &c. The entrances, always at the west end, have inclined jambs, and either semicircular or more usually flat heads. The windows, which are few and very small, with large inward splays, follow exactly the type of the openings in the round towers. There is always an opening in the east end, but not larger than the others, and the orientation of the building is generally carefully preserved.

The masonry varies according to the locality and the nature of the materials. Generally it is of a superior class of rubble work, the stones sometimes spawled, sometimes dressed to fit each other, though not in courses; in many cases it is of a polygonal character. The use of large material was preferred; the side wall of a church in Arranmore, consists of eleven stones, one being 16 ft. in length; and this is not a solitary example. A proof of the great antiquity of these structures is the entire absence of decorative forms and detail, even of the simplest molding or chamfer.

It is difficult to determine the precise period when chancels were introduced into churches in Ireland. Many of these early churches still remain without them; some have this feature as an addition; in others the small church, or oratory, has been formed into one, and a nave added; a process to be seen in actual progress in S. Molua's church, on Friar's Island, near Killaloe. An attempt at decoration appears at a later period, the old forms being preserved, the openings are ornamented on the external arches with a torus between two hollows. It has been erroneously stated that no decorated architecture existed in Ireland before the English invasion, A.D. 1152; but, in fact, three centuries previously, ornamental forms and sculptured decorations prevailed in the numerous sepulchral slabs, and on the richly adorned monumental crosses, whose inscriptions testify their era; the precise period, however, at which carved ornament began to be used in the details of Irish churches has not as yet been ascertained. While there are a number of large monastic churches, unmistakably of Norman type, founded in the half century preceding the English invasion, there are also scattered through the country, in remote districts, not under English rule for some centuries, many small churches presenting details of a highly ornamented character, and of rather a Byzantine type, in which those found on the crosses, and the decorative forms of illuminated MSS. are introduced, such as interlaced strap work, entwining serpents, snakes devouring human heads, the Greek fret, the guilloché, and other forms. It is, however, probable that these works were executed by native architects or builders; for, while Byzantine and Romanesque details are introduced, the ancient form of their door and window openings are still preserved, the converging jambs being found in the Romanesque doorways of St. Flannan's church at Killaloe; in the church on White Island, Lough Eræ; in Kilmalkedar church, co. Kerry, and others. That the richly ornamented church porch at Freshford, co. Kilkenny, is of native design, is proved by the inscription on the arch. Cormac's chapel at *CASHEL*, a well known example, was commenced A.D. 1127, and consecrated A.D. 1134; with details derived from foreign sources, is combined much native feeling; the stone roof, and many other features, are of a decided Irish type.

In the early part of the twelfth century, a new era in ecclesiastical architecture was inaugurated by the introduction of the *CISTERCIAN* ORDER of monks. Strength, convenience, and a chaste but rather severe elegance seem to have been the objects aimed at in their buildings; these, indeed, are the distinctive features of the establishments of this order in Ireland, where its followers appear to have settled about 1142; and between that period and the commencement of the thirteenth century, to have erected no less than twenty-four extensive monasteries, several of which are still in existence, but more or less in ruin. They were principally erected in the Norman style; great attention being, as usual, paid to the church, which varies from 160 to 200 ft. in length, and consists of a long nave with aisles, transepts, and a chancel; and at the east side of each transept—one or more small chapels. The chancel is remarkably short, seldom exceeding one-seventh of the entire length of the church: a low massive central tower is the only

one introduced. The moldings are remarkably simple and effective; the piers and pillars had capitals enriched with sculpture; in those of the abbey church of Boyle, the human figure is introduced habited in the native costume. That the roofs were vaulted, is evident from the remains of the rib-springers resting on corbels between the nave arches at Boyle, Dunbrody, and Ballintubber. The vaulting over the chancels and chapels of Boyle, Ballintubber, and Monasternenagh, are still perfect. Remains exist of the following Cistercian churches:—Boyle, founded A.D. 1148; Mellifont, 1142; Bective 1148; Jerpoint, 1180; Dunbrody, 1182; Knockmoy, 1190; Monaster Nenagh, 1148; and Corcumroe, 1194. Examples of eleventh and twelfth century work may be seen in the cathedrals of Killaloe, Tuam, and Clonfert; also in the churches of Killeslin, Rahin, Kilmalkedar, Cong, Disert, Tomgrany, the nuns' church at Clonmacnoise, and Monaincha; of early eleventh century work, in the church of S. Camin, Inisclatra, and Freshford, co. Kilkenny.

It was not until the commencement of the thirteenth century that the arts of England began to have any marked influence on those of Ireland, which had been invaded in 1152, by hands of Norman adventurers under Raymond le Gros, Strongbow, and others, and from that date to the close of the twelfth century, extensive castles were built by the Normans, at Lisamore, Ardfinnan, Nenagh, Roscommon, Kilkenny, Kilkea, Carlingford, and Ardee, while some monasteries were founded by the Norman barons, as also by native chiefs. But in the thirteenth century, the Normans having obtained a permanent footing, turned their attention to the improvement of their estates, the erection of walled towns, churches, and monasteries. Their efforts were aided by a considerable influx both of English and foreign ecclesiastics of various orders, who, under the protection of the Normans, seized the possessions of the Irish orders, and the livings of the native clergy. A vast number of religious houses and castles were accordingly erected, particularly in that portion of the country called the "English pale," which enjoyed some immunity from the inroads of the natives. Neither the monasteries nor the churches can, however, compare in size or architectural magnificence with similar establishments in England and on the continent. The churches, though strictly following the style then prevailing in England, are deficient in elaborate moldings and sculptured decoration, except in some rare instances. During the subsequent distracted state of the country, which continued for centuries, such numbers of ecclesiastical edifices were destroyed, that it is now difficult to form a correct opinion of the architecture of those buildings from the few, and those mutilated, remains now standing. Many of the Cistercian churches commenced in the eleventh, were completed in this, the twelfth century. The chancels at Boyle and Monaster Nenagh are finished in the First Pointed style, as also are many parts at Jerpoint and Dunbrody. Almost all the establishments erected by the religious orders, both in this and the succeeding century, were on nearly the same plan. The church lay to the south, the domestic buildings to the north, surrounding a small cloister court. The church is usually from 150 to 200 ft. in extreme length, consisting of a nave, generally without aisles, a chancel, and a tower raised on heavy piers, between the nave and chancel. The nave has sometimes a short aisle at the south, and very generally a chapel or transept, opening to the nave by one or two arches. The arches of the central tower are very narrow; in some instances not wider than a good sized door-way. The central tower is a peculiar feature in the church architecture of Ireland; it is generally rectangular on plan, but sometimes square, of slight dimensions, varying in height from 60 to 100 ft., and divided into three or more stages by molded, or chamfered string courses. It is without buttresses, and exceedingly plain in detail, never exhibiting the rich panelling, open work parapets, and ornamental angle pinnacles, seen in England. The tower is finished with a parapet, which has crenellation of a character peculiarly Irish. Examples of thirteenth century work will be found in the following edifices:—St. Patrick's Cathedral and Christ Church, Dublin; the Cathedrals of Kilkenny, Killaloe, Kildare, Limerick, and Cashel; the abbey churches of Ennis, co. Clare; Roserick, co. Mayo; St. John's, co. Kilkenny; Graigueenamanach, County Kilkenny; Kilmallock, co. Limerick; Knockmoy, co. Galway; Corcumroe, co. Clare; Buttevant and Ballybeg, co. Cork; and in the parish churches of Gowran, co. Kilkenny; and Youghal, co. Cork. The only existing lady chapel is that of St. Patrick's Cathedral, Dublin, which was much altered during its restorations by R. C. Carpenter. Vaulting, of this date, is seen in the chancel of St. Patrick's Cathedral, Dublin, and in the chancels of the abbey churches of Ballintubber, Boyle, and Monasternenagh.

During the fourteenth century a number of religious houses were erected, and alterations and additions made to others then existing. No difference of style is found in the details of the buildings then erected in

* Contributed by Mr. Richard R. Brash to the Dictionary of Architecture of the Architectural Publication Society.

England and Ireland: the same moldings, decorations, and window tracery are observable, the main difference consisting in the less pretentious character of the Irish buildings, and the deficiency of elaborate sculptured decoration. Three octagonal church towers may be referred to this period; at the parish church of Clonmel; at the parish church of Askeaton; and at the abbey church of Tristernagh, Westmeath, some time since destroyed. No mediæval spire is known to exist in Ireland. Two Cistercian churches were erected during this century; one at Holycross, and one at Kilcooly, both in Co. Tipperary. The former contains some very interesting details; the groining of the tower, chancel transepts, and side chapels which is perfect; an elaborately finished sedilia, and a curious monument usually called the shrine. Kilcooly has a very fine decorated window and other good details. Fourteenth century work will be found in the following churches:—Clonmines, Co. Wexford; Clonshanvill, Co. Roscommon; Portumna, Co. Galway; Quin, and Ennis, Co. Clare; Sligo, Co. Galway; Black Abbey, Co. Kilkenny; and Multifernan, Co. Meath; Clonmel, Co. Tipperary; Askeaton Abbey, Co. Limerick; and the chancel at Youghal, Co. Cork. During this century also, vast numbers of castles were erected by the Anglo-Irish barons, who covered their respective territories with these defensive structures, many of which still exist but demand no special description on account of their non-architectural character.

The Irish architecture of the fifteenth century has no features in common with the perpendicular of England, or the flamboyant of France. Of the mediæval styles it has the most distinctive national features, if the plentiful use of the flat-headed Tudor window in the castles and small parish churches in Ireland be excepted. The Franciscans of the second and third Orders erected the principal houses at this period; of these considerable remains exist at Athenry and Kilmacconell, Co. Galway; Roserick and Moyne, Co. Mayo; Court, Co. Sligo; Sherkin, Co. Cork; Mucrus and Lislachtin, Co. Kerry; Donegal, Co. Donegal; Killecrea and Timoleague, Co. Cork; and Adare, County Limerick. The Dominicans built Kilcarvan, Co. Galway; Orlare, Co. Mayo; and Tulske, Co. Roscommon. The Augustines built Dunmore, Co. Galway; and Bannada, Co. Sligo. In these erections, although there is no perceptible difference as regards plan and arrangement from those of the preceding era, there is a very apparent falling off in the character of the architecture. Chambers supersede moldings, and where the latter are used, the members are few and shallow; there is almost an entire absence of carving, as also of the upright panelling; the church windows have no resemblance to those of England; there are no transoms; the mullions rising to the springing of the arch, intersect in simple curves, without cusps; examples are found in the friary churches of Adare, Askeaton, Quin, and Mucrus. These windows are generally well proportioned, and though plain and simple in detail, are good in effect. A distinguishing feature in the monastic edifices are the cloisters, which have a remarkably foreign and southern aspect. The cloister court, usually placed on the north side, opens by a doorway into the church under the central tower. The proportions are rather of a miniature character, the court never exceeding 45 ft. square, and the ambulatory 9 ft. in width. The court of the Franciscan friary at Adare is 34 ft. square, the ambulatory 6 ft. 9 ins. wide; at Askeaton the court is 33 ft. square, the ambulatory 7 ft. wide. The court is divided from the ambulatories by arches and pillars, resting on a sole of solid masonry, and divided into bays each of two or three arches, each bay separated by a buttressed pier. The pillars are usually circular or octagonal, and have, in some instances, a spiral fluting. The ambulatories have generally a lean-to roof, but in some instances, as at Ardfer and Quin, the domestic apartments are situated over them, an external wall being raised over the arcades; the best examples are found at Adare and Askeaton, Co. Limerick; Quin, Co. Clare; and Sligo. The remains of the cloisters of Boyle, Holycross, Dunbrody and other Cistercian abbeys are of much larger dimensions, but there are no traces of their arcades. In some of the churches of this period, a two-light window with a horizontal head is seen in the north and south walls.

A great number of parish churches were erected throughout the country in this century. They are usually rectangular buildings of small dimensions; with a two-light flat-headed window in the east gable, similar windows in the flank walls, a south doorway, and a plain bell-cot on the west gable. A chancel screen either of wood or stone in Ireland is unknown to the writer. The only example of an ancient timber roof is at Youghal church—it is a good specimen of a thirteenth century oak roof. No portions of any ancient stained glass remain, though it was not uncommon, and fragments have been found in the ruins of churches. It is a matter of history that Bishop Ledrede filled the great east window of St. Canice Cathedral, Kilkenny, with stained glass, which was in existence in 1690.

It must be borne in mind, in the examination of

Irish buildings, that though the Pointed styles in Ireland followed those of England, each style in the former country was not confined to the particular century, but was frequently continued in the next. From a close examination of a considerable number of ancient buildings it is evident that the best periods of Irish architecture are the twelfth and the fourteenth centuries.

RICHARD R. BRASIL.

SHAM AND REAL FIREPROOF BUILDINGS.

(Continued from page 115)

THE pile of buildings at St. Katherine's dock was about 440 feet in length, 145 feet in width, and some 70 to 80 feet in height in six stories over ground. The front wall was in part carried on columns, and it did not profess to be a fireproof structure at all. The precaution was adopted of dividing the whole block into separate bays, of about 90 feet by 50 feet, by transverse partition walls, with so-called fireproof iron doors for intercommunication, but the floors were of timber.

At a period subsequent to the original erection, many of the naked joisted ceilings of the floors of the warehouses in these docks were ceiled or lined with thin sheet iron, nailed to the lower edges of the joists as a sort of palliative to rapid combustibility—a delayer of the spread of fire through loft after loft. This device, which we believe originated with the celebrated Lord Stanhope, was a great favourite with the late Mr. Jesse Hartley, of Liverpool; and for small structures—for domestic dwellings, for example—it affords, beyond doubt, an appreciable amount of protection (by delay merely, however); but as applied to warehouses upon the scale of those at St. Katherine's Docks, it is perfectly nugatory.

Let conflagration once get hold of a mass of combustible such as the *jute* with which this warehouse was stored, and to the spontaneous ignition of which, in all probability, the fire owes its origin, and this sheet-iron lining must prove as valueless as so much brown paper. So also of the iron "fire-proof doors:" no single iron door is ever fireproof. Let its whole surface get red, or even yellow hot, as often happens, and if the door be of wrought iron and hold together, which, if it be of cast iron, it is nearly sure *not* to do, then the currents of hot air that sweep over its face and come from it, and the intense radiation of luminous heat which it develops, will fire any ordinarily combustible substance at several feet distant. It is seldom safe to cool such a red-hot door by water. We have often seen combustible material—cotton bales, cork, rags, &c.—*piled up against* such doors in warehouses, when not in use.

To be non-communicative of fire, which is the only true meaning of a fireproof door, it must be a double door, *i.e.*, two plate-iron doors one at each side of the partition wall, which should itself be built hollow or double, each door made in a single plate and sliding in and on iron top frame and cill rail.

It is wonderful how *thin* the plate iron may be of such doors, if properly made and yet be quite effective. We once witnessed a pair of such doors of sheet iron only one tenth of an inch thick, but well rivetted in wrought-iron frames, and shut into well-fitting side-posts, lintels, and cills, stand red hot for seven hours, by the accidental conflagration of a carpenter's shop at one side of them, and yet never let the fire through to the adjoining building.

A second fire broke out a few hours after the first was subdued at this St. Katherine's Dock warehouse, in the same sort of *jute* in which it first commenced, but separated by one of these brick partitions and iron doors. This has been set down, like the first, to incendiarism, though it is confessed that it is not known with certainty whether the iron doors were left shut or open.

Assuming them to have been shut, there is no need to resort to incendiarism as the cause of the second fire, or even of the first. *Jute* is one of the many bodies known to be prone to spontaneous ignition. If the first mass of it so ignited, another in an adjoining compartment would become much more liable than it was before to spontaneously ignite, by reason of the heat communicated to it by the conflagration of the first. This fire at St. Katherine's Dock, like that at the London Bridge wharves, which preceded it, afforded also an instructive example of the efficiency of all the much-boasted steam fire-engines and fire-brigade engineers in coping with the conflagration of buildings of this magnitude and height, and with whole ships' cargoes of combustible materials, stowed away upon their wooden floors, in which alone there were ship loads of timber. We need not advert to the fact that the *jute* in particular was found a most impracticable material to deal with, in attempting to saturate its dense mass with water.

In buildings of this class the only efficient methods of applying water promptly, abundantly, effectively, and at any point where fire may have broken out or have got established, are those long since pointed out

and patented by Lord Dundonald. We must, however, confine our present paper to the fault-finding with existing methods which is found above, and postpone to a future opportunity such further treatment of this important subject (which has many and very diverse bearings) as shall make good, we hope, to our readers the possibility of structurally fulfilling, if men be so disposed, the rigid definition which we have given of a truly fireproof building. Meanwhile we may almost venture to predict that, vast as have been the losses produced by these two great London warehouse fires, the St. Katherine's Dock buildings will rise from their ashes and be replaced by new buildings as ill-contrived for safety, as combustible, as liable to be sets on fire, as difficult to be extinguished when on fire, and, in a word, as disgraceful shams for safe warehouses, as are those that have arisen upon the scene of ruin of three years ago at London Bridge.

There are other forces than mere physical ones—social and fiscal—at work, which promote a result so derogatory to the engineering skill of our time, and to the character of the greatest centre of commerce of the world, which need to be better inquired into.

It has been stated that the windows of the St. Katherine's Dock warehouses were all covered with close wire-work over the glass; and it is stated to have been shown experimentally that the water jet from the most powerful class of fire engines, even when perpendicularly incident, is shattered into spray by its appulse with such a wire reticulation, so that it loses the greater portion of its projectile force, and becomes unable to break the glass of the window (if that be not already destroyed), or to enter the apartment on fire, beyond a short distance of the plane of the window.

This is a practical warning against the use of wire-work in such positions, to which we cannot do amiss in giving early circulation. Water continues, and is likely to continue, our best, if not the only means of extinction to accidental fire; and as at present applied by fire engines, worked by hand or by steam from the ground level, it is all important that nothing be permanently interposed of a character to render this, our almost sole reliance, useless in the moment of need, and by the interposition of a screen, which must be difficult, and may be impossible to remove at the needful conjuncture.

We shall not, however, at present depart from the order we propose in these papers, to discuss generally the conditions and modes by which water should be best applied as an agent of extinction: that may follow at an after period. We will not confine ourselves to some observations upon the buildings themselves of existing classes, in relation to their destruction by fire, as they are found in our British towns and cities, &c.

We may divide them all into three great classes—those which make no pretence to resist fire, even for a short interval. These are, for the most part, brick built, with timber floors, roofs, and fittings. In exceptional cases, as in parts of Yorkshire, Wales, Scotland, and Ireland, for example, the shells, and even partitions, are of stone. Tiles cover a large proportion of the roofs, the timbering of which, and the pitch are necessarily large; for the rest, slates are the ruling cover.

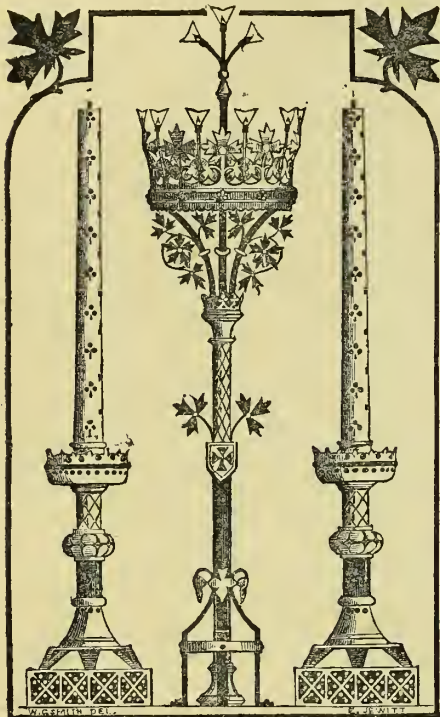
We are wont to look back with self-complacency upon the timber and half timber framed houses of our ancestors in the combustible point of view, and when we read of the great fire of London, or of the once whole villages of thatched houses, such as Crediton, in Devon, or others in our south-western shires, that before now have been burned in an hour or two of some hot harvest day, by the catching fire of a chimney, to mentally regard ourselves not as other men were in these uncivilized times and places. Yet, the truth is, we have very little to plume ourselves upon above our ancestors. From our neat and cleanly habits on the whole as a nation, from the prevalence of repairing leases, and the loss of business and expense incident to pulling down to rebuild, in all our crowded towns and cities, it may be said that almost no house appears ever to fall to ruin, become tenantless, and then be pulled down and restored. By continual vamping up, paint, and bits of carpentry and plastering, and now and then by a new brick front and a showy shop beneath, or by a new slating upon the old roof, the ancient rickety affair is kept tenable, in the landlord's sense; but to the eye of the practical building surveyor it is but a whitened sepulchre.

It is perfectly amazing to reflect upon the incalculable mass of property, much of it of a character that adds irreplacability to value (as in documents, records, leases, account books, pictures, &c.), that in this London alone is enshrined in cleanly preserved old hovels of houses, which once set on fire, will burn like matchwood. In fact, there is scarcely a third-class house, or any below it in London, built between the time of William III. and the battle of Waterloo, that, as regards the spread of fire, is materially better than the timber or half-timbered houses of the time of Henry VII.

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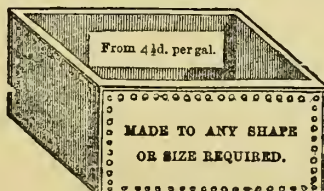


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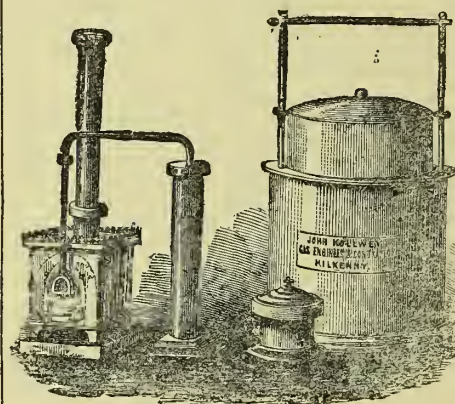
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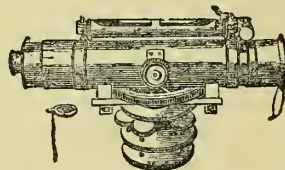
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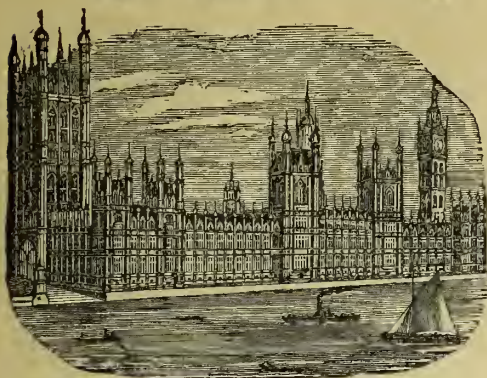
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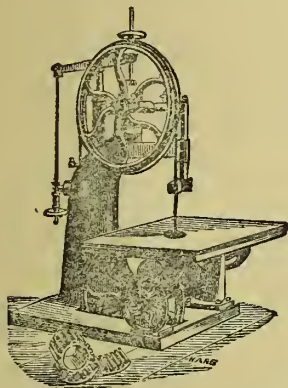
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From **WILLIAM TITE, Esq., M.P. for Bath, and Architect of the**
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House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have
used both the sorts of Cement manufactured by your firm, and
that of Messrs. Francis & Son; I mean the Cement usually
called Roman Cement, or the more recent introduction of
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either of your firms, to be equally good. I know no differ-
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use, and authorize to be used indifferently, either one or the
other. You are at liberty to use this note, if you think it ne-
cessary.—I am, Dear Sir, your obedient servant,
Messrs. White & Son. (Signed) **WILLIAM TITE.**

From **R.O. MINNIE, Esq., Surveyor to Board of Ordnance, London.**
War Office, Pall Mall, London, S.W.,
3rd March, 1864.

GENTLEMEN,—In reply to your request, I have much plea-
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my knowledge the quality has been equal to that of any other
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(Signed) **R.O. MINNIE, Surveyor.**

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Ornaments for Cornices & Centre-Pieces for Ceilings supplied.
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Materials supplied.
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JUNE 1, 1866.

1st & 15th
OF EACH MONTH.

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ILLUSTRATION:

THE BATHS OF ANCIENT ROME.

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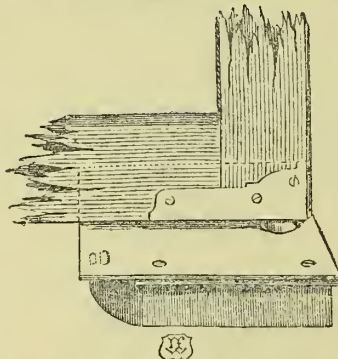
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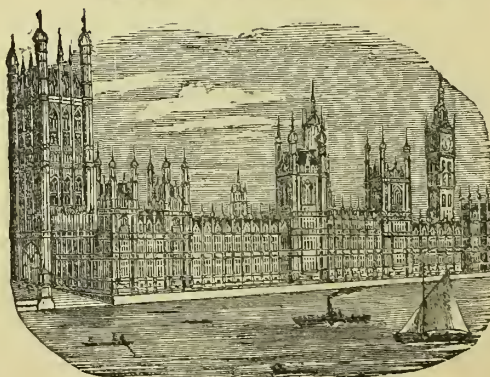
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VOL. VIII.—No. 155.



GOTH AND ANTI-GOTH.

COTLAND has been guilty of an act thoroughly un-Scottish, and for once without reaping much benefit—George Gilbert Scott has been invoked to build a university for Glasgow, and if that gentleman has failed to produce a very remarkable design, the mere fact of its being found north of the Tweed at all is sufficient to invest it with a certain exceptional character. There is really no knowing what cosmopolitan excesses Scotchmen may be guilty of after this. It is almost needless to say that Scotch architects feel themselves somewhat aggrieved—and we confess with some justice—at the slight thus put upon them, and are not disposed to bear it in silence. We think Glasgow *would* have done better at home. Trojan and Tyrian are much alike to us, and we owe nothing to either of the rival parties, so are likely to hold a tolerably unprejudiced opinion on the subject. There is nothing perhaps more amazing to architects everywhere than the way in which the works of the celebrated architect who has been called in to design this university building, continue to go down with the British public generally. Some of Mr. Scott's earlier works were, according to their date, of undoubted merit, but whether their merit was entirely owing to Mr. Scott's individual abilities is quite another question. It is known that one of the greatest of living architects—Street—was once Mr. Scott's able assistant: and people behind the scenes know that celebrated architects as a rule, when they are in large practice, do not themselves design the works that bear their names. Every architect knows that the mere routine of a large business, of letter-writing, committee-attending, and roving hither and thither, is quite enough to occupy one man without leaving much time on his hands to play the artist. From merit, the work which bears Mr. Scott's omnipotent name has sunk to unoffensive mediocrity in general design, and from that to a mediocrity actually offensive when the author and the general belief in him is uppermost in the mind. In this aspect some of his later works have been poor enough, but this design for Glasgow University surpasses them all in miserable mediocrity. Tameness, feebleness, utter want of originality, are its distinguishing features. It is only just to state that our criticisms are only founded on the design as recently set forth in the *Illustrated London News*. The principal façade appears to consist merely of a tall narrow tower with a simple and clumsily designed belfry stage on each side of which are wings identically the same in every respect; along these are ranged long traceried windows *more Scottico* in one sense at any rate. The whole is very suggestive of Gothic façades supplied at so much the yard measure, composed of

excellent windows, doors, &c., kept in stock. Placed beside a recent design by a Scotchman for the Fettes College, Edinburgh, it will not bear comparison for an instant as a specimen of masterly grouping and design.

Among other grumbles which this Scotch and *Scottish* grievance—all grievances are not Irish—has evoked, a paper read by a Glasgow architect, Mr. Alex. Thompson, before the Glasgow Architectural Society is deserving of study as being a really original and daring disquisition on a tolerably trite subject—the rival styles. Mr. Thompson takes new ground and boldly attacks Gothic architecture with able ingenuity. He is evidently no believer in the theory of our age tending to a fusion of styles in which a Gothic element will preponderate. His notions are evidently of the good old type that existed before respectable orthodox taste was overturned. The following extracts from Mr. Thompson's argument are worth perusal, not only on account of the few hard accidental truths which they contain, but also as exhibiting the extraordinarily ingenious fallacies to which a bias for one style will lead an apparently honest mind:—

"The Gothic revivalists are fond of catching hold of people by their prejudices. They say that theirs is the national style, and this assertion has come to be admitted almost generally. Yet nobody seems to understand exactly what it means. It certainly had not a national origin; and, although it was practised in this country for some centuries, and assumed national and local peculiarities, the same may be claimed for the Classic styles. But they tell us that it suits the national taste. Now this argument, if it is worth anything at all, might be advanced after it had been proved that Gothic is the best style, otherwise it is no compliment to the nation. We are next told that it is the Christian style, and, strange to say, this most impudent assertion has also been accepted as sound doctrine, even by earnest and intelligent Protestants; whereas it ought only to have force with those who believe that Christian truth attained its purest and almost spiritual development at the period when this style of architecture constituted its corporeal frame. The claims put forth in favour of this style are so multifarious, and the practice of its disciples so conflicting, that it is difficult to get hold of the essential points,—like some of the lower forms of animal existence to which nature has not supplied either the power of defence or the means of escape, but, in lieu of these, has distributed their vitality, that, when their heads are chopped off, they do not seem to miss them; and as for hearts, they have none. Ever and anon we are called on to admire the constructive skill displayed by our ancient builders. The principle of the arch in its various applications, and the means employed to control the law of gravity in its different directions, are expatiated on as altogether marvellous. Now, all this is consistent with fact, and yet the whole is founded upon an egregious error. Can anything be more absurd than to rear a fabric with the very agents of destruction? Every stone in an arch is a wedge, and every stone upon it is a hammer, slowly, it may be, but surely, driving those wedges home. All the parts in Gothic architecture seem to aspire at standing upon end. Great height and extreme inequality of height, with high-pitched roofs, are its most striking characteristics. The result of all this is, that the inequality of height produces inequality of subsidence in the walls and foundations. The high roof, presenting a great extent of surface to the wind, communicates a vibratory motion to the walls. These roofs are either vaulted with stone, or constructed of timber; but in neither case do they contain within themselves any provisions against their natural tendency to thrust out the walls. This is met by the altogether external opposing power of buttresses, at an enormous cost of material; for a modern engineer would, for the same purpose, make a pound of wire go as far as a ton of stone. But perhaps this violent conflict of forces may account in some measure for the favour which the style has obtained with a fighting people like ourselves. Then there are no projecting cornices to protect the walls from rain. In the older buildings there is not even any contrivance for conducting the water from the roofs to the ground; it is merely spouted from the gurgyles in concentrated streams, which the wind blows into the walls. It follows that the water,

penetrating the stone and finding its way into the joints, is expanded by the irresistible power of frost. There is not a hair's breadth of motion produced by any or all of these agencies but is inevitably taken advantage of by the ever-vigilant hammer-and-wedge principle of construction. The walls are split by the arches, or thrown off the perpendicular by the thrust of the roofs; and, even should the lofty spire fail to attract a demolishing thunderbolt, sooner or later, in spite of all the opposing power of standing and flying buttresses and counterpoising pinnacles, the whole thing finds its way back to the ground from whence it sprang. There can be no doubt of the fact that the introduction of the arch into architecture has strewed Europe with ruins; whilst in Egypt and Greece, except where deliberately injured or destroyed, we have lintelled structures which have stood the test of thousands of years without showing an open joint or any other symptom of decay further than natural disintegration. The simple unsophisticated stone lintel contains every element of strength which is to be found in the most ingeniously contrived girder; so that Stonehenge is really more scientifically constructed than York Minster."

In Mr. Thompson's prejudice for trabecated architecture he completely ignores the fact that an arch may be a beautiful thing *per se*, and worth building for its own sake, and also, a trifling practical view of the question, that materials large and long enough and purses ditto do not in general occur throughout the world so as to enable everyone to indulge in unlimited trabecated architecture.

To the inequality of height and the inequality of subsidence argument we would feel much disposed after the manner of boys' arguments to cry 'coward!'

Fain would I climb but fear I to fall,
If your heart fail you climb not at all,

is good advice for timid architects. Is the high roof inseparable from Gothic architecture, and is it devoid of special merit of its own? Do all vaulted and timber roofs never contain within themselves any provision against their tendency to thrust out the walls? Speak for your own roofs Mr. T. Have all Gothic buildings no projecting cornices to protect their walls from the rain? Do we in the XIXth century spout our water "from gurgyles in concentrated streams" to the detriment of the walls? If we do not where is the practical application of the argument. "The simple unsophisticated stone lintel contains in itself every element of strength" certainly so far as it goes, but we fancy an arch could be made to go 'with every element of strength,' rather farther—Stonehenge *may* be more scientifically constructed than York Minster, but we fancy there are some 'architects' who would be very glad to believe the theory as being one calculated to relieve them of a good deal of scientific trouble. Mr. Thompson is evidently one of those persons who is unable to appreciate Gothic architecture except in its archæological or picturesque aspect.

"Gothic architecture," he says, "does not express greatness; it is only grand where it is actually of large dimensions. Small Gothic buildings are not impressive unless begrimed with dirt, or in a dangerous state of dilapidation. Indeed, these last-mentioned qualities have a great deal to do with the romantic interest which we associate with old Gothic structures. The effect of breadth produced by blackness, and the softening influences of decay, cover many of the defects inherent in the style. Suppose Alloway Kirk to have been put in a tidy state of repair, and painted in fresh stone colour, Tam O'Shanter and his grey mare Meg would have passed it without a thought of ghaists or witches. So would it be with any moderately-sized Gothic erection."

Hear, O ye young men, what Mr. Thompson has to say for your modern drawing and for the relation it bears to finished work. There is a certain amount of truth mixed up with a certain amount of error—we should be sorry to recommend young

architects to be so courageous as to go before the public with drawings in lines only. Good drawing is that which most truthfully and intelligibly conveys an idea to every mind of what the work in execution will be. In this respect old-fashioned architectural drawing was defective, but at the same time it must be admitted that to a great extent modern draughtsmanship has opened the door to a great deal of sketchiness not tolerable in business-like drawings, and a tendency to inaccuracy—both extremes should be avoided.

"Men cannot divest themselves of civilization and knowledge even if they would. Ruskin says that good Gothic must have something wolfish in it. This is not the character of modern Gothic. We have no wolfish turns to serve, and therefore it is perfectly tame and subdued in its nature and aspect. We miss in it the rude vigorous life, the spontaneity, the artlessness, the wild revelry of invention, the heedlessness of rules, the interesting accidents, the sober colour, the softness of dilapidation, and the terrible bulging and splitting of the walls—these qualities are quite inimitable, and inadmissible by modern society, and in our orderly ways of planning, measuring, and estimating. Your Gothic architect nevertheless affects it as much as possible. He cannot be bothered with correct drawing; indeed, it does not suit him. He cannot himself tolerate, far less dare he venture before the public with a design in architectural lines merely. He feels, without knowing it, the poverty of his style, and in order to conceal this from himself and others, he draws his design for a new building in a clever dashing manner which he has acquired in making up his stock-in-trade by sketching amongst the grim and mouldering remains of the Middle Ages. His lines are neither straight, continuous, nor of equal thickness, but jerked, intermittent, and blotchy. He adds to the architectural lines those of the masonry, and, by a mode of hatching the individual blocks with a pen, produced by an alternate up-and-down and side-to-side motion of the hand, he gives a good imitation of canted stones in an advanced state of decay. The windows and other recesses are shaded in the same manner with a tawny blackness resembling matted tufts of coarse hair. He writes the titles on his plans in unintelligible old English characters, and his work seems a perfect realization of his own dreams and those of his ecclesiastical patrons, and eagerly the order is given for the building to be proceeded with; but it rises from the ground trim, straight, and clean shaven; for although he has done his best to maintain the deception by rough-dressing the stones, and leaving the needful lime out of the joints, still, after every trick has been tried, the result is disappointment, and by-and-by the thing is pronounced to be another failure; in a year or two dirty streaks resembling shadows appear where shadows are not wanted, and to people of tidy habits this is quite abominable. Those who love the effect of dilapidation in old buildings detest it in the new, and so auble silicate or vulgar paint is resorted to to prevent the softening influences of disintegration and discoloration which give the building a still more hard and determined expression than it presented at the beginning."

However we may be inclined to disagree as a matter of opinion with Mr. Thompson's clever arguments, fairly and honestly expressed as they are, all honour should be paid to the spirit which dictates his concluding remarks:—

"He who made us after His own image endowed us with a creative faculty, and our using or abusing of that talent cannot be matter of indifference to Him. The pagan Phidias placed his wonderful frieze of the Parthenon at the top of the wall of the cella, almost concealed from view by the columns and entablature of the peristyle, and the back of the Iliad, which Canova and Flaxman pronounced to be one of the greatest marvels of the sculptor's art, was turned towards the tympanum, never to be seen by man from the time that the figure was set up there under the eye of the artist, until it was taken down again under the eye of Lord Elgin. And it may be asked, 'why this waste?'—The answer is that Phidias believed that the gods knew all things. And when we exhibit the like faith, the like success will follow. I know the difficulties which bar the way to excellence in this branch of art, and that if we would secure a needful share of the husks which the swine do eat, we must submit to have our brightest visions blurred and disfigured. But if we qualify ourselves with proper care, and endeavour humbly and faithfully to fulfil our mission, by the help of a sympathetic client now and then, we may be permitted to do some little towards the inauguration of a better state of things."

ANOTHER COMPETITION SCANDAL.

On a recent occasion a limited competition for additions to the Royal St. George Yacht Club, Kingstown, was invited, Mr. McCurdy and Messrs. Lanyon, Lynn and Lanyon being the favored (?) architects admitted to the contest. After a good deal of debating, Messrs. Lanyon, Lynn and Lanyon's plans were formally approved of and accepted. In spite of this, we are informed that two other members of the Club, independently of the committee, subsequently brought forward plans on their own account—one by Mr. E. Trevor Owen, and another by a Mr. O'Kelly, we are informed, a builder at Bray. The plans of the latter gentleman, we understand, have been adopted in defiance of all good faith and fair dealing. The whole transaction speaks for itself. Apparently the more respectable and influential the body with which architects may have to deal, the more proverbial corporate delinquency they may expect.

A PLEA FOR DECORATION.

WHEN ships come suddenly to a perfectly unknown island, do they ever find Nature unprepared for the discovery? Never! She is before them with her eternal benignity; the foliage proper to the place, the exquisite shells, the delicate seaweeds, the silver sand, the variegated cliffs, the strange fishes and beautiful birds, are always ready to teach the endless lesson of the loveliness of life. If a hunter breaks suddenly, in chasing his quarry, into a secluded and lonely nook of the Indian jungle, does he find anything scamped or stinted because he is the first who ever came there, and may be the last? More likely he finds the place decked out as though the mere chance of human eyes alighting upon it were reason enough to make it like a palace for kings and queens, with fretted panel-work of tropic foliage traced against the azure sky, and a carpet of curious arabesque in green grass and colour; with the trees all about glorying in flowers yet unnamed—wonderful white-petalled blossoms, the sight of which might make point-lace mad, drooping over dark glossy leaves—fragrances which never yet were stolen for the scent-bottles of fine ladies—parasites clinging by bushels to the tree stems, in form like clusters of rose-red grapes burst open, and displaying pearls inside for seeds. Wherefore is all this lavish provision, if the passion of the eye and the heart for beauty were not to be fed as much as the lower appetites?

ON HOSPITALS.*

HOSPITAL is the general name given to a building for the reception of travellers (caravansera, hospice, hostel, khan, moristan, okel); the temporary accommodation of the destitute (homa, refuge); the support of meritorious and indigent persons (almshouse, asylum, bedehouse, college, poorhouse, workhouse); the maintenance and education of youth (asylum, college, school); or the care of the sick. Although this last class alone will be treated as the subject of this article, it must be remarked that sometimes the intentions of the founders of hospitals have been altered. Thus the hôtel-dieu at Paris, originally a resting place, has been appropriated (before 1200 it is stated) to the sick: the priory of Knights Templars at Kilmainham had until 1312–5 an almshouse and hospital for the sick, which, on falling into the possession of the Hospitalers, were used for the reception of guests and strangers to the exclusion of the sick and infirm: and great part of the monasteries may be said to have originally been almshouses, but they have become (like the hospice du Mont St. Bernard) resting places on a large scale; whether the relief be gratuitous, or acknowledged by donations, or even purchased as if at an hostel, as in this last case. It must further be observed, that sometimes the intentions of the founders included two or more of the classes above named. Thus the hospital of S. Cross near Winchester was a rest but also an almshouse: the ospedale di Pammato, erected 1420–3 at Genoa (Gauthier, "Les plus beaux édifices," fol., Paris, 1818, pl. 52–7), and the hospice des Quinze-Vingts at Paris, were of mixed character, being respectively asylums for the incurable and the blind: the ospedale di S. Spirito in Sassia rebuilt 1471 and later, at Rome

(plan given in Letarouilly, "Les édifices de Rome Moderne," fol., Paris, 1840, pl. 256) supported 1,680 sick persons, with 800 foundlings and 500 lunatics: the Bogodolnia at S. Petersburg (much on the scale and plan of the Bicêtre, formerly for malefactors; and the Salpêtrière, formerly for prostitutes, foundlings, and lunatics at Paris) accommodated 1,400 persons, being either incurables, octogenarians, or widows: the hôtel-Dieu, built 1443, for nuns, poor, and sick, at Beaune (given in Verdier and Cattois, "Architecture civile et domestique, 4to., Paris, 1855, i, 1) is cited by Viollet le Duc, s. v., as a complete model of such an establishment at that period, except that a flat ceiling has been given to the great hall: and the conjunction of almshouse with school, as the hospital at Ewelme (shewn in Dollman, "Examples of Ancient Domestic Architecture," 4to, London, 1858), or as Whitgift's hospital at Croydon, is one of those happy combinations which, though not unfrequent, are not sufficiently common: also, Bridewell, given by king Edward VI. as the first workhouse, or rather house of correction, for strumpets and idle persons, and for the lodging of poor wayfaring people, was long regarded as an hospital rather than a prison, and drew vagabonds to the metropolis: it was afterwards used as a prison for persons summarily convicted within the City of London; and is now a school for the industrial education of poor neglected children. The popular use of "hospital" for the classes of establishments above mentioned, has been the cause of great confusion, as may be seen in Turner and Parker, "Account of Domestic Architecture," 8vo., Oxford, 1851–9, ii, 194; iii, 45, 179. Lazar-house; Lazar-etto; Lunatic asylum; Maladrerie.

The sick persons who hoped to profit by the worship of Esculapius and by the help to be derived from his priests (the oath taken by these advisers before receiving possession of the medical secrets of their fraternity is still extant) must have had for shelter near his temple some buildings (epidaurus, hierum), which have been compared to hospitals for the temporary reception and treatment of patients: it is unnecessary to enter into the merits of the restoration proposed by Piranesi of the island in the Tiber at Rome; for upon the testimony of S. Jerome, Ep., lxxiii, there does not appear to have been anything corresponding to a modern establishment of that character before 380 A.D., when Fabiola took charge of sick paupers who had been accustomed to lie in the streets and square. It is true that this statement seems at first sight to be at variance with the direction of Columella, R. R., xi, 1, and xii, 3, "in valetudinarium deducat," but this applies to a servant to be taken into the domestic sick-room. It is even not evident that the Romans had military hospitals, although there must have been places reserved during their campaigns for the sick and wounded, both men and beasts; that the valetudinarium is mentioned by Hyginus Gromaticus, "De Castrametatione," is noticed by Pringle, "Observations," 8vo., London, 1775. The very words brephotropeum, gerontocomieum, nosocomieum, orphanotropeum, ptochotropeum, and xenodocheum, suggest the language of a Christian people: but Irish writers insist that, before the introduction of Christianity into their island, the "brian bearg," or "house of sorrow," attached to the royal residence at Emania, was a building set apart for the maintenance and recovery of the sick and wounded. The question of early hospitals for the sick is discussed in "Notes and Queries" journal, 1865, 3 ser., vii, pp. 13, 176. The hospital of S. Bartholomew at Smithfield was founded for the entertainment of poor diseased persons until their recovery, of women in childbirth, and of the orphans (until seven years old) of mothers who died in the house; which was governed by a master, brethren, and sisters: this appears to be the most precise account that has been preserved of a real hospital in early times: and it may be noticed that the practice of medicine was not prohibited to the occupants of monastic establishments until the middle of the twelfth century.

In speaking of mediæval hospitals, great difficulty arises from the careless use by French writers of the terms hospice, hôpital, hôtel-Dieu, and maladrerie. The necessity for distinguishing between the three latter words is asserted by Lebeuf, "Histoire de la ville de Paris," 8vo., Paris, 1754, i, 25–6, who considers the hôpital as a rest, and treats the two last as meaning an hospital for the sick: Tenon, xiv, says "hôpital ou maison de charité," and xlii, "hospice ou petit hôpital;" in general the words hôpital and hospice are applied indifferently, as in Appert, Rapport, 12mo., Paris, 1824: but the most recent authorities define hôpital as formerly a rest but now a hospital; hospice as properly a rest but now an asylum; and hôtel-Dieu, or hôtel-général, as the principal for the sick and poor of a town; while Viollet le Duc, Dict., s. v. Hôtel-Dieu, p. 117, notices that the maladrerie was for persons afflicted with contagious diseases. Yet, while particular attention is bestowed by the last-named author upon the building noticed below at Tonnerre, he gives illustrations from Verdier, ii, 101–3, of such hospitals for the sick as the hôtel-Dieu

* Specimen article reprinted from the last number of the Architectural Society's Dictionary.

at Angers (1153-84); and the infirmary in the abbey at Ourscamp. From these writers may be collected illustrations or notices of edifices being three-aisled halls, at Chartres, and at the abbey of S. Jean des Vignes at Soissons; at Orleans (destroyed), at Briecomte-Robert, and at Compiègne, being two-aisled halls; and at Lubeck and at Bourges, being single halls; which, though supposed to have been intended for the reception of the sick, may have been simply asylums or rests. They should be compared with the "bede-houses" or asylums at Stamford and at Higham Ferrers, as given by Dollman, who also shows as an almshouse S. Mary's hospital at Chichester, probably originally a rest for nuns, if not a convent, all having in their plan the same principle, viz., a hall ending in a chapel: the building at Tonnerre, which Verdier, i, 14, says was for the sick, but states, ii, 148, that it was for the poor, was originally intended as a rest, as is shewn by Dormois, "Notes," Auxerre, 1853, but it is given as an example of an hospital by Viollet le Duc. This author, without pretending that the quasi-cellular system evidenced in some of the buildings just named is otherwise preferable to the system of open wards, insists that it is morally superior in the privacy which it gives to each patient, who may thus be spared the sight, though not the sound, of another's agony; as well as that irritation justly reprobated by Nightingale, "Notes on Nursing," 8vo, London, 1860.

With regard to modern hospitals, it may be noticed for the sake of comparison of plan, that the following list includes the infirmary or hospital for the alleviation of incurable diseases (although that, as previously stated, is rather an almshouse). A Lock hospital derives its name from *loges* or locks of hair, lint, or rags applied to sores; a *loke* or *lock* formerly signified a lazaret, and the word now denotes an hospital for the special treatment of patients suffering under the venereal disease, according to the "Pictorial Handbook of London," 1851, which gives the names and dates of erection of the London hospitals and infirmaries at that time. With respect to specimens of the continental hospitals, it may be noticed that the Conseil Général d'administration des Hôpitaux et Hospices Civils de la ville de Paris, "Plans," fol., Paris, 1820, gives twenty-nine plates of the hospitals then existing; and its successor the Administration générale de l'assistance publique à Paris, has published two works of considerable importance, viz., Blondel and Ser, "Rapport sur les hôpitaux civils de la ville de Londres au point de vue de la comparaison de ces établissements avec les hôpitaux de la ville de Paris," 4to, Paris, 1862; and Husson, "Etude sur les hôpitaux," 4to, Paris, 1862.

In London, Guy's hospital (1720-4) and the London hospital (1740) may be taken as specimens of the mode of planning at those periods; and with them seems to have commenced in the United Kingdom the passion for erecting hospitals, which in Dublin produced on an average a new one every ten years. There seems to have been little hesitation either in Great Britain or in Ireland as to the merits of any design until the commencement of the present century; thus Warburton, "History of the City of Dublin," 4to, London, 1818, ii, 701, describing Sir Patrick Dun's hospital, commenced 1803 in that city, notices the fever ward 66 ft. by 38 ft. and 20 ft. high, with partitions 7 ft. 6 ins. high (forming cells on the mediæval system advocated by Viollet le Duc) and mentions that the plan was adopted in consequence of recommendations in Howard, "Account of the Principal Lazarettos," 4to, Warrington, 1789, and of observations which proved that in the best regulated hospitals, with walls of the ordinary height (from 11 to 13 ft.), infectious diseases were propagated, notwithstanding every attention paid to ventilation and cleanliness. The same historian, p. 710, shows that at the erection 1804 of the fever hospital, double-bedded rooms 16 ft. by 11 ft. 3 ins. and 10 ft. 6 ins. high, ranged along galleries, were preferred by medical authorities as affording privacy, separation, ventilation, avoidance of disturbance, and secrecy of death, with facility of cleansing and fumigation, to open wards which had the recommendation of general ventilation, smaller surface of walls for the deposit of foul matter, and positive cheapness: he describes at some length the mode adopted for ventilation.

Although Durand, "Précis," 4to, Paris, 1821, p. 67, had indicated, in a passage which will presently be quoted, the plan from which the model buildings of the present day have been developed, the state of medical science in England as regards plans for hospitals, until a recent period, seems to be indicated in Granville, "Guide to St. Petersburg," 8vo, London, 1835, ii, 270-91, who described the military general hospital and the artillery hospital, and considered that the regimental hospitals in that city, for style of building, order, cleanliness, and internal arrangement, superior to anything he had seen elsewhere (except the hospital for the poor in the same city), even to the naval hospitals at Haslar and at Plymouth. The same writer criticised the civil hospitals, particularly the Obouchoff, having beds for 500 patients and 120

lunatics, in wards 560 ft. long by 40 ft. wide; but praised the Bolniza dlia Bednikh, or imperial hospital for 240 sick paupers, as being arranged better than any others, with rooms for twelve to fifteen beds on each side of a long corridor. The "Allgemeine Bauzeitung," 1851, xvi, 16, considered that a new era in the erection of hospitals began with the erection 1787 of that at Bamberg; the great feature being the abolition of night stools in favour of a closet having an entrance from the ward and an exit into the corridor; and mentions the Israelitenspital (1793) at Vienna, the Allgemeine Krankenhaus (1823) at Hamburg, and the Katharinen hospital (1827) at Stuttgart, as models; it gives a plan of the S. Annen-kinderspital (1848) at Vienna, on the system which Granville had praised.

Such were the principal hospitals out of France (including the improvements effected 1848-9 at Middlesex hospital), although Gwilt, "Encyclopædia," 8vo, London, 1842, had called attention to the plans published by Durand. The latter, remarking that of all buildings an hospital requires most salubrity, and usually possesses the least, observed that wards, united at the angles of a square or at the centre of a cross, form centres of infection to the patients and to the inhabitants of the neighbourhood. The buildings at Milan and at Plymouth are each only deserving of praise for a single point; the first, for the pleasant and convenient promenades supplied by the *loggie* to convalescents; the second, for being the best arranged of all hospitals, in having fifteen pavilions united by colonnades around a spacious court; but this praise is moderate because the wards are coupled. He concludes by remarking that the hospitals of La Roquette and of Ste. Anne outside Paris, designed upon a programme devised 12 March, 1788 by the Académie Royale des Sciences commenced 1788 by Poyet, but almost immediately abandoned, would have been models. Each ward was to be 32 ft. 9 ins. wide and 29 ft. 6 ins. high, with a passage 39 ins. wide behind the beds, the night stools being in the window seats, and the water closets at the end of this passage, which was to be 6 ft. 6 ins. high under the windows. Each ward was to have a brick vault, with openings in the centre, a system adopted in the ospedale di Pammatoe at Genoa long previously. The influence exercised by Poyet's designs, upon all such edifices that have been since executed in France, is noticed in the "Builder" journal, 1856, xiv, 509; which, mentioning the merits of the hospital erected 1854 by Drosæart at Malines (engraved in the "Journal Belge de l'Architecture," year vii) notices that the hôpital du Nord, afterwards Lariboisière at Paris, for 606 beds, erected 1846-54 by Gauthier, at a cost, (including site) of about £650 per bed, followed the arrangements of the new hôpital S. André, erected 1825-9 at Bordeaux by J. Burguet for 728 patients, at a cost of £56,318, and gives Burguet's plan. This plan appears to have been adopted as a model by Robertson, who in two papers read at the Statistical Society of Manchester, established a distinction between dormitories for the healthy and wards for the sick, contending for an abolition of all that communication by passages and stairs between wards, which he considered to create an "hospital atmosphere." He supposed that the prevention of the formation of such an atmosphere had been secured on the continent in several instances, naming the hôpital de S. Jean at Brussels and the hôpital Beaujon, with the hôpital Lariboisière at Paris.

The recommendations made by Robertson as to site, contents, arrangement of windows, natural ventilation, allowance of 2,000 cubic feet to each patient, heating, and disposition of beds, which are given in the "Builder" journal, xiv, 509, provoked a criticism, p. 526, in favour of artificial ventilation with an ascending current, which was answered, p. 581, by a plea for artificial ventilation with a descending current, giving an account of the quantity of cubic feet per patient admitted in a minute: at the hôpital Lariboisière 12 to 14 ft.; at the hôpital Beaujon 24 to 36 ft., which was inefficient; and at Guy's hospital 40 to 60 ft., which was successful. This was criticised in a rejoinder giving an account of satisfactory ventilation attained 1849 at Middlesex hospital, acknowledged p. 662, and continued xv, 36. This literary vigour appears to have been occasioned by the publication (1856) of the plan by Mennie for the Victoria general military hospital for 1,000 men at Netley. Although the hospital at Netley has been pronounced an error, care was taken at first by the English government, which appears to have followed in 1855-6 the example set by the French in 1785, and ordered the construction of a programme. The subsequent difficulties seem to have arisen from the determination to have an average of only ten patients in each ward; Dr. Andrew Smith, director-general of the army medical department, with several military surgeons and officers, being opposed to the adoption of larger wards, although aware that in France the wards contain thirty to forty patients; and the committee (Colonel O'Brien, Dr. Mapleton, and Captain Laffan) decided in favour of small wards. But 2 March 1857 the medical men connected with

the Middlesex hospital set forth a memorial which caused an explanation, a reply, an investigation in which the committee obtained from medical officers of the great hospitals in London a general adhesion to the original programme, confidential official communications, a fresh inquiry 1858 with several reports condemnatory of the building, and an approval by Miss Nightingale of the plan as finally amended by its authors. The design is said to have provided averages of 1,315, 1,406, and 1,800 cubic feet per patient (a list of the space in other buildings, varying from 1,000 to 2,426 cubic feet is given in the "Building News," 1861, vii, 939), and to have been commenced upon an estimate of £150,000, increased in three years to £327,919: "Builder" journal, 1856, xiv, 457; xv, 141, 340, 587; xvi, 493; xvii, 603; "Building News" journal, 1857, iii, 845, 875; iv, 814; v, 945. The communication of the wards with a general corridor and with the water closets has been alleged as its chief fault: but its plan should be compared with others regarded as models at the time, before it be deemed that too high a price was paid for the instruction and correction of the military authorities; or that the whole matter exhibits a remarkable instance of official incapacity.

The amount of experience that had been thus gained was illustrated by the publication in the "Builder" journal, 1860, xviii, 606, of a plan for a regimental hospital with ninety-two beds upon one floor, by Dr. Combe, who assumed that a tenth of the force is liable to be in hospital at the same time, and considered that in civil and naval hospitals one attendant is required for every seven patients, while in military hospitals the attendant can take charge of fourteen. He devised wards 100 ft. long and 22 ft. wide, by 15 ft. high, for twenty-eight patients, giving to each 1,178 cubic ft. under the regulations issued by the war office prescribing 1,200 ft.; and observed that 2,000 ft. are required when the windows are opened once in a day. He cited the opinion of the Commission on Warming and Ventilation, that no reliance for ventilation is to be placed on the fire-grate; considered the questions of small wards, windows, ventilation, water closets and fires; and objected to the Melville hospital at Chatham, the marine hospital at Woolwich, the hospital at Dundee, and at Vincennes, and the hôpital Lariboisière: a criticism and a rejoinder appeared pp. 649 and 684. But this had been preceded by various suggestions, mainly valuable, that had appeared in the periodicals devoted to the civil arts and sciences: amongst them may be enumerated Daly, "Revue Générale," 4to, Paris, 1844, v, 339, pl. 19, giving a design with illustrative text by Dupuy, which deserves to be carefully read: and the "Builder" journal, 1858, xvi, 280 (an account of the system of ventilation affording an average supply of 67 ft. per minute in the new buildings erected by Hawkins at Guy's hospital, allowing 1,600 to 1,700 cubic ft. per patient), 493, 609, and 641, with block plans; 1859, xvii, 402, 417, 435-7, 494. These were followed by the "Building News" journal, 1861, vii, 939, 959, and 977, giving plans of hospitals at Ashton, Preston, Sheffield, Chatham, Aberdeen, Stoke Devon, Arbour Hill at Dublin, and 1,005 the dimensions and arrangement of the design there given; all which require to be carefully compared with the statements viii, 33 and 104.

The ultimate decision of the military authorities was shewn in the official plans for hospitals issued through the inspector-general of fortifications, and which were reviewed in the "Builder" journal, 1862, xx, 872. This work, 1865, xxiii, 170, gives as the most recent exposition of scientific views the suggestions made by the Société Chirurgicale de Paris, with regard to the reconstruction of the hotel Dieu, and of hospitals generally. It demands a minimum of 538 sq. ft. per bed as clear space of sight outside the building; a maximum of two stories of ward, and of 200 to 300 beds in each hospital, considering that two small hospitals are preferable to one equal to their united capacity, because the periodical and regular vacancy of wards has been attended with good results. It considers that small wards of fifteen to twenty beds are usually to be preferred (but admits that some classes of patients require a larger space and separate wards), and that the building should not only possess a day ward for convalescents, but another for their meals, so that the day ward may be purified at meal times. It declares that the wards should be separated by landings and rooms for attendants, and that the officers should have the power of removing all curtains, as the furniture ought not to hinder the free circulation of air. It suggests that the wards should be completely isolated blocks, all having the same aspect, and being exposed without any obstruction to the rays of the sun, to the effects of rain, and to the action of the wind; and that they should be arranged in a single line or parallel lines at intervals of 260 to 330 ft., in order to obtain an efficient separation and a sufficient current of air. Finally, it declares that no emanation from refuse or effluvia is to be tolerated, and that no abundance of artificial ventilation compensates for an insufficient natural ventilation.

THE BATHS OF ANCIENT ROME.*

THE introduction of the Turkish baths of late years into common use in this country having made the public in some measure acquainted with the mode of bathing either for health or pleasure practised by the ancients, and the system requiring much scientific skill in the construction of the furnaces and flues, in order to economize as far as possible the large expenditure caused by the consumption of fuel, has led me to think that the recital of a few passages selected from the works of the most reliable authors, explanatory of the means used for providing such luxuries to the public at large, whether as regards the distribution of the buildings erected for the purpose, or the manner in which the details of the system were accomplished, might, perhaps, excite an interesting discussion amongst my more learned brethren, and elicit from them valuable information respecting many points upon which the early writers have differed; and should I be so fortunate as to elicit for the younger members of the profession the experience of their "most potent, grave and reverend" seniors, while thus crudely endeavouring to impart my own slender knowledge on this classic subject, I shall consider myself the gainer in having been beaten in the race.

Although the Greeks only used the word *thermæ* to denote hot springs, the term has been applied by the Romans to their magnificent public baths, erected when their capital was mistress of the civilized world; not only were cold, tepid and vapour baths provided for in these palatial institutions, but all that art, science, or luxury could suggest was called into requisition to render them lasting monuments of the golden era of the Roman dynasty.

In the remains of these noble edifices are found the most spacious porticoes, apartments for athletic games, ball courts, lecture halls, temples and groves in connection with the various bathing chambers, all decorated in the most elegant and costly manner, and thrown open to the Roman public at the nominal charge of an as (quadrans), or less than one farthing of our money. The expenditure being on so vast a scale, it is supposed that they were usually built by the emperors. We are told that Agrippa bequeathed his gardens and baths to the public, and assigned estates for their support, that the people might enjoy them gratuitously. Some idea of the vastness of these structures may be formed from the fact that the Pantheon at Rome, now a colossal Christian church, is stated to have been only the vestibule to the baths of Agrippa.

As luxury and effeminacy advanced we learn that unguents were freely delivered to the frequenters to rub over the body, probably in those great baths instituted by the emperors. The most remarkable and extensive of the Roman *Thermæ* were those of Agrippa, Nero, Titus, Domitian, Antoninus Caracalla, and Diocletian. Although Ammianus Marcellinus reckons sixteen of them, and other writers enumerate as many as eighty. The plans of all were much alike, standing among extensive gardens and walks, and often having a portico surrounding them. The interior of the more elegant chambers were lined with marble and enriched with the most costly columns, statues, paintings, and collections of books. The famous Ulpian library, founded by the emperor Trajan, having been in later years transferred to the baths of Diocletian.

Among the ruins of these marvellous specimens of Roman greatness we find those of Titus, Antoninus Caracalla, and Diocletian in the best state of preservation. Their present state is thus described by an elegant modern author:—"Re-passing the Aventine Hill we come to the Baths of Caracalla, occupying part of its declivity and a considerable portion of the plain between Mons Cæliolus and Mons Cælius. No monument of ancient architecture is calculated to inspire such an exalted idea of Roman magnificence as the ruins of their *thermæ* or baths; many remain in a greater or lesser degree of preservation, such as those of Titus, Diocletian and Caracalla. To give the untravelled reader some notion of these prodigious piles I will confine my observations to the latter, as the greatest in extent and as the best preserved; for, though it be entirely stripped of its pillars, statues, and ornaments, both internally and externally, yet its walls still stand, and its constituent parts and principal apartments are evidently distinguishable."

The dimensions of the Baths of Caracalla were in length 1,840 ft. by 1,476 ft. in breadth. At each end were two temples, one to Apollo and another to Æsculapius as the tutelary deities (*Genii Tutelares*) of a place sacred to the improvement of the mind and care of the body. The two other temples were dedicated to the two protecting divinities of the Antonine family—Hercules and Bacchus. The principal buildings consist of a grand circular vestibule, with four halls on each side, for cold, tepid, warm and steam baths. An immense square occupied the centre, for exercise when the weather was unfavourable for the open air, beyond a great hall where 1,600 seats were placed for bathers, and at each end were libraries. The building terminated on both sides in a court surrounded by porticoes,

an odeum for music, and in the middle a spacious basin for swimming. Round the edifice were walks shaded by rows of trees, particularly the plane tree, and in front a gymnasium; the whole bounded by a vast portico, opening into exedrae or spacious halls, where the poets declaimed and philosophers lectured. A careful writer tells us there exists a variety of accommodation which we cannot particularise in these great baths. At some distance from the main building, within the enclosure, was the castellum or furnace for heating the water, &c. A circular room, called the solar cell, used to contain the numerous labra of the baths, 111 feet in diameter. Spartianus thus writes: "Caracalla left magnificent *Thermæ* which went by his name, the solar cell of which could not be equalled by the best architects of that age. The window lattices are said to have been overlaid with brass or copper, of which material the whole vault was made; and so vast was its extent that learned mechanics declared it impossible to make one like it."

The Farnesian Bull and the famous Hercules were found in one of the chambers in the baths of Caracalla, and the most excellent paintings, sculptures, and stucco-work have been lavished on their completion. In the baths of Titus many figures were discovered scratched on the plaster, supposed to imitate basso relievo, but on closer examination the small nails which fastened the gold, silver, and bronze that covered the figures are perceptible. Although smaller than the other baths they were executed at a period when the arts still preserved their primeval perfection, and must have been decorated in the most refined taste. The far-famed Laocoon was found in the excavations, and several pillars, of granite, alabaster, and porphyry. To these baths belong the sette salle (seven halls), vaulted chambers, 100 feet by 15 ft., and 20 feet in depth, intended originally to supply the baths, and occasionally the coliseum, with water, when naval engagements were represented therein. The baths of Diocletian occupied a commanding site on the Quirinal hill, the ruins now converted into a convent of Carthusians. The principal hall, now the church, is supported by 8 pillars, 40 feet in height, and 5 feet diameter, each pillar in one stone of granite. The flooring has been raised 6 feet, by which means the proportion of the columns has been much injured. The hall measures 350 feet by 80 feet, and its height 96 feet. The mixture of Corinthian and Composite capitals shews that genuine taste was declining in the time of Diocletian.

Passing through the atrium, you entered an open court of moderate dimensions, surrounded by a portico, towards one end of which stood a baptistery or basin for cold bathing. The sides of the portico were usually painted with trees laden with fruits, those of the basin with various fish, upon a blue ground, which, seen through the water, appeared swimming in their native element. This court was usually paved with mosaic. The bathers next visited the unctuary, where they anointed themselves with a coarse, cheap oil, before commencing their exercises. Here also the finer scented ointments were kept for use on coming out of the bath, and the room was warmed to a considerable degree. This chamber was found quite full of pots of perfume and unguents. An amusing anecdote is related of the emperor Hadrian, who went one day to these baths, taking his bath with the common people, and seeing a veteran whom he had known among the Roman troops, rubbing his back against the marble, asked him why he did so; the veteran replied that he had no slave to rub him, whereupon the emperor gave him two slaves and the means of maintaining them. On another occasion several old men, emboldened by the good fortune of the old veteran, commenced rubbing themselves before Hadrian against the marble, but perceiving their drift, he gave them the rub himself by ordering them in future to rub one another.

Thence the bathers entered the apodyterium where their garments were given to the attendant slaves, called *Capsarii*. Next this chamber was the *tridarium*, a lofty and spacious apartment, containing a second cold bath, intended to be used when the weather made it unpleasant to bathe in that exposed to the open air. The lower end of this room was left vacant; the upper end, in which the bath was placed, was semicircular, and in the centre of the semicircular part were placed the basins. This portion of the wall was decorated with pilasters and niches, in which were placed statues, to be seen represented on the painted walls of the baths of Titus; and two raised steps, called *scolæ*, or places of waiting, ran round it for the use of spectators or persons waiting for their turn. Hence the term school, because the philosophers frequented these places, where they were sure of an audience. This bath was lighted from above, that no shadow might be cast upon the bath itself. Before bathing various exercises were used to heat and render supple the body—as lifting heavy weights or rings, kneeling on the pavement and bending backwards till their heads were brought in contact with their feet, and similar tricks, which were practised by women as well as men.

The tepidarium came next in succession. The bathers sat on a seat below the water surface, and scraped themselves with an iron or

* Paper read at the Ordinary General Meeting of the Royal Institute of the Architects of Ireland, on the 17th ult., by Charles Geoghegan, Fellow.

bronze instrument called a strigil. A long shallow vase stood near the lahrum, from which the attendants supplied themselves with water to pour over the bathers: the lahrum was used for the face only, it is supposed. After being dried with linen or cotton cloths, they used a light, shaggy mantle called guasape; young slaves then rubbed perfumed oils over every part of the body, even the soles of the feet. On leaving the warm bath they passed slowly through the tepidarium, or stayed some time in it to cool gradually. The waters of the tepidarium and frigidarium were not used for bathing, but to regulate the temperature, unless in the smaller baths of Pompeii. The laconicum was originally in the hot bath (concamerata sudatio), but afterwards separated when the numbers increased. The proper meaning of the word laconicum has been much disputed; the Marquis Galiani speaks of it in the following terms:—"The laconicum, as far as I know, has been up to the present esteemed by all a great chamber in which the people entered for the purpose of sweating." Cameron adds to this—"I, for myself, hold it certain that the apartment for this purpose has been by some authors improperly termed; the laconicum is nothing more than a little cupola which covered an aperture in the pavement of the hot bath through which the vivid flame of the hypocaustum, or furnace, passed and heated the apartment at pleasure; without this means the hot bath would not have had a greater heat than the other chambers, the temperature of which was milder. I have been induced to form this opinion, not only from the ancient paintings found in the baths of Titus, but also by the authority of Vitruvius, who says that the hot bath (concamerata sudatio) had within it, in one of the corners (or rather ends), the laconicum. Now, if the laconicum was in the corner of the hot bath, it is clear it is not the bath itself, but merely a part of it; and if, as others have thought, it was the bath itself, to what purpose served the concamerata sudatio?" Probably an explanation of these inconsistencies may be found in supposing the word to have been differently used at different times. In the later baths, calculated for the accommodation of enormous numbers, it might be necessary to have a distinct room dedicated to a purpose for which a part of the hot bath was sufficient in the time of Vitruvius. The ancient painting above alluded to, discovered in the baths of Titus, in some degree corroborates the opinions of both Cameron and Galiani. It represents the several apartments which we have described, but has the bath in a chamber separate from the laconicum, or concamerata sudatio, while at the same time the laconicum itself is represented as a small cupola, as described by Cameron; and as the number of figures make it evident that the painting is intended for a public bath, we may draw from thence a further reason for supposing that the laconicum and hot bath itself, which Vitruvius calls concamerata sudatio, were separate, in consequence of the increasing numbers who attended them.

The laconicum had a hypocaust under the floor, and a false lining round the whole room, behind which the heat circulated: this was formed of large square tiles fixed by metal cramps at each corner; a plug was forced through the tiles in several places, forcing out the clay, when soft, like a tube and forming a kind of short pipe on the back of the tile, through this the cramps passed and regulated the space from the walls for the heat to circulate. The clypeus, or shield, was suspended within the laconicum over the fire to damp it and regulate the heat; probably water was sprinkled on the outer metal to temper the dry heat of the place. The floor of the hypocaustum, called the suspensura, is thus described:—At Pompeii, instead of 8 inches square piers, 2 feet high, they are 9 inches square and only 1 foot 7 inches high, they support tiles 15 inches square; on these is set the signinum opus, or concrete of lime and broken tiles, and where visible, as in the laconicum, a mosaic pavement is bedded on it. The invention of the suspensura was attributed to the Sybarites, and was evidently new in the days of Seneca, who speaks of window panes of talc and suspensura of the baths as wonders. The foculus, or brazier, was also commonly used to heat private rooms.

The tepidarium usually had two steps or platforms all round for bathers to dry themselves upon after leaving the caldarium, or hot bath, which was of a circular form surrounded by three steps with niches in the walls containing seats; the walls and floors pierced with flues from the hypocaustum, as seen in the section of the concamerata sudatio at Pompeii. The laconicum stood at one side, which gave its name to that part of the room. In the centre of the conical ceiling was a clypeus of bronze resembling a round shield forming a valve raised or lowered by a chain to regulate the heat. Vitruvius describes wooden floors to the caldarium, rendered secure by iron bars supporting tiles plastered over. In the baths of Titus three boilers were found, as at Pompeii. Copper tubes, twisted like a worm of a still, were sometimes used to prevent the water being smoked while being heated. Seneca thus describes his own times in contrast with the days of the Republic's manly vigour:—"I write you from the very villa of Scipio Africanus, having first invoked his spirit, and that receptacle in which, as I believe, that great man

was buried. I see a villa built of squared stones, the walls of which enclose a wood, and has towers in the style of a fortification; below the building and walls is a reservoir large enough for the use of an army. The bath is small and dark, after the old fashion, for our forefathers thought nothing hot that was not obscure. Great was my pleasure when I compared the manners of Scipio with our own. In this nook did that dread of Carthage, to whom our city is indebted that it was taken *but once*, bathe his limbs, wearied with rustic labour, for he tilled his own ground; according to the ancient custom he lived under this mean roof; he stood upon this paltry pavement. But who would now submit to bathe in this fashion? That person is now held to be poor and sordid whose walls shine not with a profusion of the most precious materials; the marbles of Egypt inlaid with those of Numidia,—unless the walls are laboriously stuccoed with imitation of paintings,—unless the Thasian stone, formerly a rare sight even in temples, surrounds those capacious basins into which we cast our bodies, weakened by immoderate sweats, and the water is conveyed through silver pipes. As yet I speak only of Plebeian baths; what shall I say when I come to those of our Freedmen? What a profusion of statues! What a number of columns do I see supporting nothing, but placed as an ornament, merely on account of the expense! What quantities of water murmuring down steps! We are come to that pitch of luxury that we disdain to tread on anything but precious stones. In this bath of Scipio are small holes, rather than windows, cut through the walls so as to admit the light without weakening it as a fortification; but now we reckon a bath fit only for moths and vermin if the windows are not so disposed as to receive the rays of the sun during its whole course, unless we are washed and sunburnt at the same time—unless from the bathing vessel we have a prospect of the sea and land; so that what brought crowds together to admire it when first built, is now rejected as antiquated, so inventive is luxury in finding new things to obliterate her own works. Formerly the baths were few in number, and not much ornamented, for why should a thing of such little value be ornamented? a thing invented for use and not for the purposes of delicacy. The water in those days was not poured down in drops like a shower; neither did it run always fresh, as from a hot spring; nor was the clearness of it considered a matter of consequence. Yet, oh, good Gods! how pleasant was it to enter those baths, though dark, and covered with common plaster, which you knew that Cato in his *Ædileship*, or Fabius Maximus, or one of the Corneli had tempered with his own hands. For the most noble *Ædiles* performed this duty of entering these places which the people frequented, to require cleanliness, and see that they were kept at a useful and wholesome temperature; not, as has lately been invented, at a heat like a furnace, so that a slave convicted of some crime might as a punishment be bathed alive. It now seems to make no difference whether a bath be warm or burning."

METHOD OF HEATING THE WATER FOR THE ROMAN BATHS.

The baths of Diocletian allowing each cell to, contain six persons, would accommodate 18,000 persons at once. To provide water heated even to a moderate degree for such a vast number would at the present day be considered a difficult task for the engineer, but the Romans have left us evidences of the means adopted by them to overcome every obstacle in affording the multitude the luxury of warm water bathing in the marvellous public baths which have long excited the wonder and admiration of the scientific world. The castella of Antoninus Caracalla's baths, as represented to us by Piranesi, was supplied by the aqueduct of Antoninus, under which passed the Via Appia, cistern B receiving the water from aqueduct, C apertures allowing water into lowest chambers, D reservoir with mosaic pavement, where the water was exposed to the sun, E another aperture, allowing water into lower chamber over hypocaustum, F hypocaustum, OO doors for fuel to fires, H transverse section through the middle of the castellum. There were twenty-eight vaulted chambers placed over the hypocaustum, in two rows, fourteen on each side, and all communicating with each other; over these were twenty-eight similar chambers, but only one of these having connection with those below. On top a spacious reservoir, not very deep, exposed the water to the heat of the sun; this reservoir extended over all the chambers, and received the water from cistern B, and not immediately from the aqueduct. The overflow was provided in the top cistern leading to the drains. Only two of the twenty-eight chambers communicated with the external air by apertures C and E. Flues (N N) ran up through the side and party walls of these chambers, to increase the facility of heating so vast a body of water. Chambers (H H) were also supplied with flues from the hypocaustum, which served as a reservoir of tepid water for those below; the water they received was also heated by the sun. When the hour for bathing had arrived, the cocks were turned to admit hot water from the lower chambers into the labra of the baths, to which it would run with great velocity

and ascend a perpendicular height in the thermæ, level with the surface of receptacle in the castellum. The current would be accelerated by the expansive force of the steam confined in the castellum. To prevent the water cooling as it passed through the tubes underground, they were surrounded by flues from the præfurnium, and always heated before the water entered them. Each chamber measured 49 feet 6 inches by 29 feet 6 inches, and about 30 feet high, the superficial feet in all being 38,115 feet, multiplied by 30 = 1,143,450 cubic feet in lower chambers, and same quantities in upper ones, making the whole quantity heated = 2,286,900 cubic feet, and, allowing eight cubic feet for each person, this quantity would accommodate 285,862 persons. This comprehensive system was probably introduced at the time of Augustus, in whose reign Dion Cassius tells us that Mæcenas first instituted the warm swimming bath or Calida Piseina. We are informed that lime and hair mortar was used in building the brick chambers containing the water of the castella. The castella itself would cover a greater space than Exeter cathedral, and hold as much water as that entire building, transepts included, if filled to within nine feet of the ridge rib of the groining; every wall and pavement was perforated with square earthen tubes, fitting into each other, through which the flame and smoke circulated, and afforded as much heating surface as possible.

The hypocaustum, O O, was a furnace under ground, the bottom forming an inclined plane sloping towards the mouth of the furnace; communications were made from the back of the furnace to the several rooms of the baths by means of flues fixed in the walls P, more or less numerous, as the purpose of the rooms required; these flues proceeded from the roof of the furnace, which rested on pillars of brick, M, two feet high. At Wroxeter, in Shropshire, a small square room was discovered set with four ranks of small square brick pillars (a model of similar rooms discovered in England may be seen in the entrance chamber of the Society of Antiquaries in London) 8 inches square, laid in a sort of strong red fine clay, each pillar resting on a foot square tile or quarry of brick; on top of each pillar a tile, L, 2 feet square was laid, hard as flint, like most Roman bricks. These pillars supported a double floor, K, of very strong mortar mixed with coarse gravel and broken bricks; the first of these floors was laid on the large tiles, and when dry the second floor was laid on it; but first, a range of tunnel bricks, fixed with iron cramps to the wall within, the lower ends of which were level with the undersides of the broad tiles, and every tunnel had two opposite mortice holes, one on each side, cut through for a passage to disperse the heat across them all.

In the antique baths of Rome, where the church of St. Cecilia, in Trastevere, now stands, the flues may still be seen; they are of copper, and appear to have been gilt.

To those who have not visited the remains of the silent grandeur of ancient Rome the rhapsody into which the classic writers have indulged, when describing the glory of the works of departed ages, may appear to border freely on poetical imagery; but the lover of nature and art, who has sat in dreamy contemplation on the ruined vaulting of the noble halls which once formed part of the baths of Caracalla, studded with mosaics of rare and costly marbles, representing in varied hues the most intricate and beautiful devices amidst the stately columns of Travertine Marble, or Cipolina, their marvellously sculptured capitals and entablatures half buried beneath the luxuriant

foliage of russet and green, forming a combination to which each lends a grace,—the golden gleams of an Italian sunset fitfully struggling through the chinks which time has left in the colossal walls still towering above the chaotic debris, and casting their deep shadows like a mantle of oblivion over the gems of art beneath them. Leaving the imagination for the moment to realize the magic scene of their pristine splendour filling the crystal fountains with the murmuring waters, while the voices of the multitude proclaim the praises of their munificent founder. He who has so mused alone can realize what was the triumphant position of architecture as an art 2,000 years ago, and feel emotions akin to those which animated the early authors.

Mr. J. H. Owen, Hon. Sec., called attention to the fact that the quantity of water supplied to these baths would be double that proposed by Mr. P. Neville to be supplied to the city of Dublin for 24 hours; he also entered into the discussion respecting the meaning of of the word "Laconicum" on the plans.

Mr. W. Fogerty thought that a consideration of the vastness of some of these ancient buildings should humble us in our boastfulness of more recent works, and the amount of materials employed therein. The plans, being of Classic buildings, proved their suitability and flexibility. They were suited, and are copied, for more recent works, as chambers for popular assemblies, court-houses, &c. The immense size of the stones used in the columns was also worthy of remark. The means of heating reminded him of the tubular boilers in stone.

Mr. J. Rawson Carroll, Fellow, thought Mr. Fogerty's remarks would lead to the supposition that he thought the Gothic architects had declined in planning, as compared with the Classic builders. The conventual houses did not prove his proposition. The churches of course were restricted in their plans by their use. He thought the amount of time consumed in the use of the Roman baths only proved the luxury and ease of the people.

Mr. T. A. Kelly, Associate, asked if these Bath buildings were used for that purpose only; some of them seemed to have been also (at least as regards Roman remains in France) used as palaces.

Mr. Geoghegan explained that authors are divided as to the number of these baths; they range from sixteen to eighty. Mr. Kelly would find that the palaces and private residences were heated on the same principle as the baths.

A vote of thanks, moved by C. H. Brien, seconded by W. Fogerty; Resolved—that the thanks of the meeting be given to Mr. Geoghegan, for his paper, and that it be referred to the Council for publication.

REFERENCES TO BATHS OF DIOCLETIAN.

A. Entrance Hall	Q Q. Libraries
B. Apodyterium	R R. Atria
C. Xystus	S S. Back Entrances
D. Atrium	T T. Rooms attached to Xystus
E E. Vestibules	U U. Rooms for Athletæ
F F. Tablina	W W. Peristyles
G G. Frigida lavatio	X X. Detached Baths
H H. Conisterium	Y Y. Apodyteria
I I. Ephæbeum	Z Z. Elæothesia
K K. Elæothesium	a a. Bath-keeper's Apartments
L L. Frigidarium	b b. Schools
M M. Tepidarium	c c. Stadium
N N. Caldarium	d d. Theatre
O O. Laconicum	e e. Spaces for steps to seats
P P. Temples	

SANITARY.

SUBJOINED is the report of the Medical Officer of Health for the City of Dublin for month ending May 19th:—

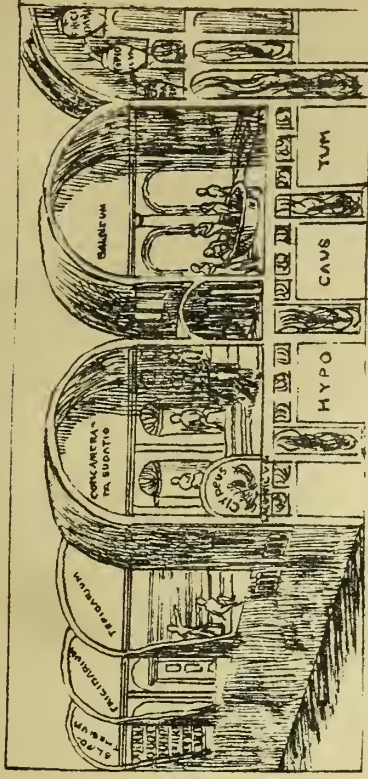
"During the past four weeks the death-rate has been moderate, 568 deaths having been recorded by the Registrar-General, against 656 during the preceding month, and 534 during the corresponding period of 1865; while the rate, therefore, was in Dublin one in 448, it was in London and suburbs one in 457, in central London one in 489, in Liverpool one in 342, and in Glasgow one in 370. Zymotic diseases produced 134 deaths, of which 56 were by fever, and 218 cases of that disease were admitted into the Hardwicke and Cork-street Hospitals from city residences, against 264 in May, 1865. Fever mainly prevailed in the neighbourhood of the following streets:—Great Britain-street, Lurgan-street, Coombe, Wood-quay, and M'Guinness's-court. On the 12th instant two deaths occurred in eleven and fifteen hours respectively, after the first symptom from a fever, most unusual since the middle ages, and characterized by rapid failure of the circulation, destruction of the blood, and the pouring out of it under the skin, which thereby became almost black. A third death occurred during the same week in the Rathmines district, from the same malady, and another had been reported during the week ending March 24. Disinfection and free airing has been adopted in all the houses, and the alarming disease has not spread. Diarrhoea produced only five deaths during the month,

against seventeen during the preceding month, not one having occurred in the municipal or suburban districts during the weeks ending May 5th and 19th. No circumstances could be more reassuring at a time when great dread of the invasion of cholera exists. The best preventative measures against this epidemic are deducible from the methods in which the cholera poison has been proved to extend, contained in the alimentary discharges of the patient it may be carried to others through the air or clothes, or in water. For such reasons I advised the Sanitary Committee that any cases that arise in ships arriving from infected ports, should be treated in commodious and well-aired hospital ships, or in some adjacent building, and not brought into the interior of the city. Flushing sewers and street channels, removing filth depots, and inspecting the dwellings of the poor, are the steps your officers have taken for prevention; and I would further advise that our present water supply should be drunk cold boiled, as the only reliable mode of purification. It is to be hoped that the local authorities of suburban districts will undertake properly-directed preventive measures. Puerperal fever, erysipelas, and scarlatina, have been very prevalent, and efforts have been made to check their spread by disinfection and thorough airing. Hooping cough was fatal in 21 instances, against 25 last month. Consumption produced 54 deaths, against 84 in the previous four weeks. The Inspector of Nuisances and his assistants visited 257 houses in which contagious diseases had arisen, or which were complained of at the City Hall, 83 nightly lodging-houses, 24 bake-houses, 126

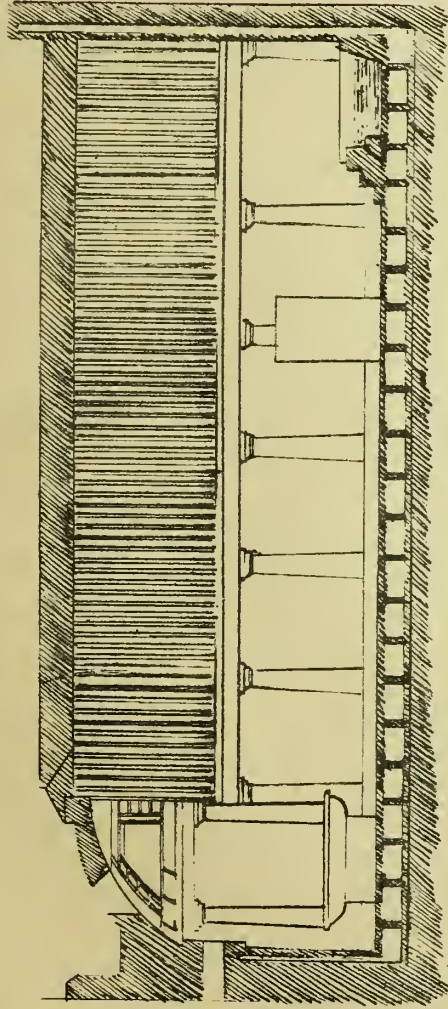
slaughter-houses, and 3 knackers'-yards. The sanitary sergeants visited 275 houses set in tenements, and recorded 2,002 sanitary defects in them. They also inspected 1,645 houses previously visited, and found that 3,140 defects had been remedied. The police magistrates having decided that houses set in tenements at and under the rent of 3s. weekly, were subject to registration, and the bye-laws of the Corporation, it is to be hoped that no further opposition will be offered to the enforcement of these necessary regulations. The sergeants also procured the abatement of various nuisances which were likely to promote disease, especially in St. Peter's parish, at the suggestion of the parochial clergy. The odours from the South Eastern Chemical Works were much complained of during the first week of the month, but they have since been abated by remedies suggested to the proprietors."—E. D. MAPOTHER, M.D.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

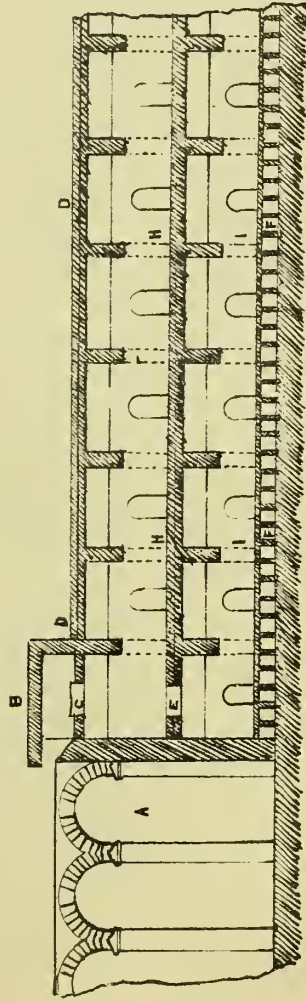
A MEETING was held on the 24th ult., to consider the draft circular proposed to be issued to all competition committees, containing suggestions for their guidance. The meeting was very badly attended, and considerable difference of opinion expressed on some of the clauses of the suggestions. The meeting stands adjourned till Monday, the 4th inst., when an attendance of a "multitude of counsellors" is very urgently desired. So important a matter deserves more attention.



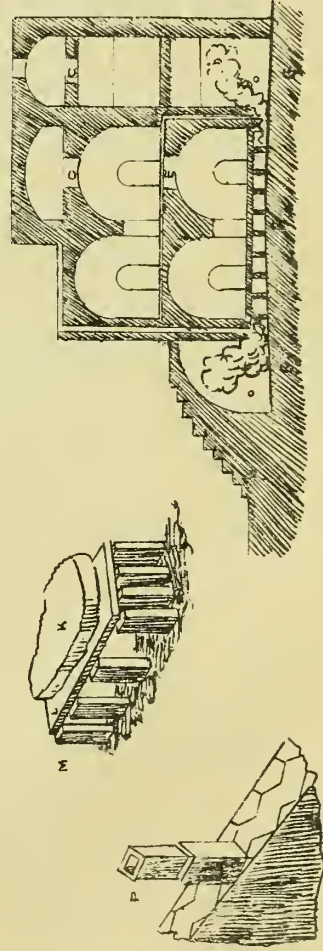
PAINTINGS FROM THE "BATHS OF TITUS."



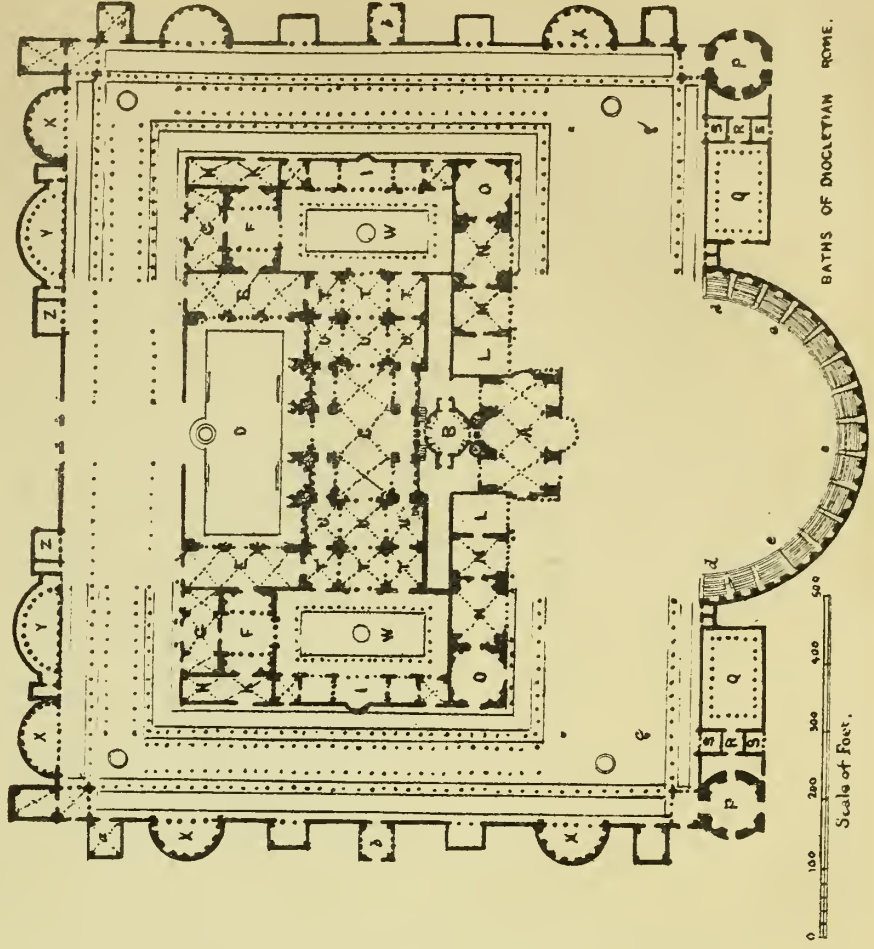
SECTION OF THE CALDARIUM, POMPEII



CASTELLA OF ANTONINUS



SECTION AT B.



BATHS OF DIOCLETIAN, ROME.

THE LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

ON LABORERS' DWELLINGS:*

SUCCESSSES AND FAILURES OF EFFORTS TO IMPROVE THEM BY MEANS OF INSPECTION, LOANS, AND PUBLIC COMPANIES; AND THE EXPEDIENCY OF EXTENDING TO IRELAND THE COMPULSORY PRINCIPLE IN THEIR ERECTION AND MAINTENANCE.

SINCE I placed this paper on the Society's list, many unexpected demands have been made on my time, and in this way I account for many imperfections which I fear you will perceive in its arrangements and fulness. The subject of the dwellings of the labouring classes presents itself in so many aspects, and there are so many professional gentlemen and landed proprietors present, whom I am anxious to engage in the discussion, it will be best brought before you by my making my own observations as brief as possible.

The dwellings of the poor in cities, towns, and rural districts in Ireland are ill-constructed, dilapidated, over-crowded, and unwholesome. Let me attempt the description of one or two in each of these situations—Gill-square is a blind court opening by a narrow archway under one of the houses in Cole-alley, Meath-street, in this city. In it there are nine three-storey houses, built on three of the sides of a square of about fifty feet; the roofs are broken, the walls present a most unsafe and tumble-down aspect, the windows are boarded up for more than half their space. Every room is to the utmost overcrowded with beings, whose dirty, ill-clad, and spiritless aspects it is saddening to behold. There is but one yard for all, and in this, till last year, there was a hovel about ten feet high and eight square, in which three adults were huddled. Here, however, time has wrought improvement, for there now remains but a heap of rubbish. If I had time, or if it were my province to depict the moral features of the denizens, they would appear of even a more degraded character than the buildings, and of no place could the words of Kingsley be more truly descriptive:—

"I turned into an alley 'neath the wall—
And stepped from earth to hell. The light of heaven,
The common air was narrow, gross and dun—
The tiles did drop from the eaves; the unhinged doors
Tattered o'er ink pools, where reeked and curdled
The offal of a life; the gaunt-haunched swine
Grown at their christened playmates' o'er the scraps;
Shrill mothers cursed; war children wailed; sharp coughs
Rang thro' the crazy chambers; hungry eyes
Glared dumb reproach."

In a neighbouring house in Cole-alley, some years ago, twenty people were found lying in one room, of whom five were ill with fever, and Mr. N. Robinson has ascertained that in the 171 rooms of this alley there exists an average of over five persons.

56, Bow-lane, West, I have described in a recent report to the Corporation as follows:—Hall and stairs covered with three inches of crusted filth; first flight so rickety as to be unsafe; second without a bannister; floor of second landing broken into two holes about a square foot each; dangerous to life and limb; ceilings of both top floors broken and let in rain; no lower sash in window of back room, so that it had to be covered with a petticoat nailed over it; such state would produce colds and rheumatism; filthy privy, and back yard without a sewer—prolific causes of diarrhoea.

Poverty of the owners is not the cause of the dilapidation of these abodes, for the persons who set them, like many of their class, have raised themselves to comparative affluence by profits thus gained from the poor.

There is much of this kind of property owned by respectable persons, who never enter it, but leave it to be managed by the "deputy" or agent, who is not usually of an improving spirit. In proportion to space such tenement houses are highly rented, far more so than the gentleman's house.

In Cork things are no better, as we learn from recent reports of the Sanitary Committee. "The overcrowding of the wretched tenements in which they live, each house containing several families, ranging in the aggregate, in some instances, from thirty to sixty human beings, male and female, in each house, for which large rents are exacted by the landlords, who will not spend one penny in the cleansing or improvement of their houses, unless coerced by force of the law to do so. Your committee have learned that a practice prevails a nongst poor families occupying rooms in these houses to underlet a portion of their rooms to nightly lodgers—an evil which it appears to your committee might be met by the enforcement of the Lodging House Act." Such were the worst parts of London, undrained, dilapidated, and thinned by pestilence every few years before the fire of 1666, which

therefore cannot be regarded from every point of view as a calamity.

The labourers' cottages in such small towns as Chapelizod, Navan, Carrick-on-Suir, or Ennis, are usually built in lanes, and are often placed back to back, excluding all chance of thorough airing, or the provision of sanitary accommodation: they consist of a single room or a living room and a sleeping place of about twelve feet square and eight feet high, which offers for the breathing of the five inmates (the average) and the vagrant, who is almost invariably accommodated with a night's lodging, about 192 feet of space—1,000 being the average in public institutions. This would not be so hurtful if there were any means of renewing the air within it, but from the absence of a chimney in the sleeping room, which is usual, the small size and immovable state of the windows, no ventilation occurs. In such an overcrowded state there can be no decent separation of the sexes. When a death from contagious disease occurs in such an abode, the retention of the body within it is fraught with fearful evils, and since the abolition of the Vestry Act there were no funds for interment, and if the relatives were unable to provide them they had to beg the amount from the neighbours. Sir Hervey Bruce has, however, obtained an Act this session which empowers poor-law guardians to bear the expenses of interment.

Neither in such a room can ablution of the whole body be accomplished, and I have frequently found persons (especially females) suffering from skin diseases and other maladies, who for many years had never washed any part of their bodies but the face, neck, and hands.

Evictions and the demolition of cabins in the rural districts have driven agricultural labourers into the small towns, and as new abodes in the place of those removed would be subject to taxation, they have not been erected. Besides the fearful overcrowding thus induced, the labourers have to expend their strength in walking long distances to their work. The remedy is that which followed in England last session, upon a masterly demonstration of its necessity by Dr. Hunter, of the Medical Department of the Privy Council—namely, union rating, for which a Bill has been introduced by the members for Dungarvan and Limerick.

The mud hovel of the Southern and Western peasant is too well known by the sketches of English tourists, to need any description here. Planted anywhere, regardless of situation or soil, the low walls, the black, half-rotten thatch, the want of any proper flue or of windows (for the hole filled with an immovable and partly glazed sash cannot be so regarded), the clay floor, which becomes soaked with the pigs' food or more dangerous filth, and the adjacent manure heap, are all highly promotive of disease. From the want of a back door, thorough airing can never be effected.

The admission of domestic animals, the pig especially, has done much to propagate measles and other parasitic diseases, which are afterwards injurious to man when their flesh is used.

Mr. Godwin, of the *Builder*, has often quoted the description of the way in which the inmates are disposed, as observed by a medical friend of mine:—"Generally the pigs dwell beneath the beds, the human tenants in them, and the poultry over head; the people can enjoy the prospect of bacon and chickens, which, however, they never taste."

If there be an inner room, it is close and stifling, and so ill-lit that when the doctor pays his visit in the daytime a candle is required to permit him to see his patient.

There are in Ireland, according to the last census, 89,374 mud or sod hovels of one room only, and 489,668 mud houses with more than one room, giving an increase in Connaught of 5,168 of the latter class since 1841. The average number of persons occupying each of these dwellings is in towns 4.53, and in rural districts 5.24.

Now the remedy for this deplorable state does not lie in the labourer's hands, however great his willingness to pay for better accommodation, but with the landlord, when he recognizes the duties which appertain to his property. Many diseases are produced, promoted, or rendered more fatal among the poor, and if contagious, spread to the rich by such conditions as I have sketched.

(a.) Fever.—The man who is depressed by the want of fresh air is more liable to catch contagious disease, and in an over-crowded, ill-aired room it must spread to others when one is stricken down. During the epidemic of the first quarter of this century the practice, when fever seized a cottager, was to build off the part of the room in which he lay, and to introduce through the window any food or medicine he required. A more disastrous consequence of the ignorance among the people of the laws of health perhaps never occurred. One and a-half millions of cases were reported in the epidemic of 1818. The fever rate of Irish towns is

constantly and fearfully higher than that of English towns, owing to defective house accommodation and the reception of vagrants who spread the contagion.

(b.) Diarrhoea must always prevail, and typhoid fever and cholera when introduced must spread, if there be no efficient means for the removal of refuse, and if it be allowed to soak around the dwellings and poison the wells and the atmosphere. Gastric fever is a usual pest of the cottager's children, and is produced in the same way.

(c.) Convulsions carry off so many infants in Irish towns as to greatly raise their mortality, and this disease is the effect of impure air acting on the susceptible nervous system of infancy.

(d.) Consumption and other forms of scrofula are, without doubt, promoted by want of pure fresh air, and are becoming lamentably fatal in many of our northern towns.

(e.) Accidental deaths occur likewise by overcrowding; thus during the last ten years, in Liverpool, 828 deaths of infants have been caused by overlying.

The other physical and the moral evils which result from the wretched condition of the habitations of our poor, I shall not now touch on, but they are subjects pre-eminently important for the philanthropist and the statesman. The evils which neglected dwellings impress on our countrymen are carried with them when they emigrate to British and American cities, in which the term "Irish" applied to a neighbourhood is the synonym for "wretched and filthy"; and galling to our national pride as the expression is, no candid man can deny that there is some truth in it. It becomes the duty of every man to lend his aid in removing the causes which lead to such universally recognized degradation.

The means which legislation has hitherto provided for the improvement of the dwellings of the humbler classes have been inspection and the advancement of Government loans.

Inspection in towns in Ireland is only allowed in nightly lodging-houses duly registered, and only when the population exceeds 3,000, and the town has been placed under Commissioners by the adoption of the Improvement Act of 1854. In England exemption is only granted for those below 200, and in Scotland below 700. Overcrowding is thus irrepressible in hundreds of towns which fall below that population, and in Parsonstown, Arklow, Kiltrush, Portlaw, Roscrea, Macroom, and Boyle, which, although above it, because they have not adopted any Improvement Act. As an example of a town which is overcrowded by the reception of vagrants at night, I may mention one very near us—namely, Swords. As few of the towns which have adopted the Act of 1854 employ any inspector, it follows that nightly lodging-houses are unregulated in Ireland, except in a few of the larger cities.

Power to inspect the tenement dwellings of the poor in the same way as common lodging-houses has been advocated by the ablest writers, and first and most forcibly by the Rev. Charles Kingsley; but Dublin is the only city in these kingdoms to which it has been granted.

Such powers were conferred last year under the Dublin Improvement Act, and are now anxiously sought for by London and other English cities, through their health officers and representatives. Under the Improvement Act of 1847, bye-laws were already in force regarding the following matters over nightly lodging-houses:—registration; inspection; number of lodgers; separation of male and female lodgers; airing and cleansing; notice of infectious disease and disinfection; water supply and domestic accommodation; exclusion of swine and other animals; and the keeping of a copy of the regulations in each room.

Ninety-five such houses were registered and regularly inspected, and one single fact will prove with what advantage; an average of one case of fever yearly occurred in the whole of them, whereas nearly every tenement house produced a case.

Such considerations induced the Corporation to seek power over tenements set weekly at rents under 3s., and the Lord Lieutenant sanctioned bye-laws respecting the condition of roof, walls, windows, house-drain, and other sanitary requisites, and imposing penalties on the owner for neglect in these respects, and on the occupier for any offence in injuring or abusing such accommodations. The owners of some of the houses, which number about 9,000 of the entire houses in the city, at once organized themselves into a body with the grandiloquent and scarcely intelligible title of "The Anti-political Ratepayers Protective Association," whose object was to protect themselves from the outlay necessary to render the houses fit for human habitation. By representations that the dwellings of the poor were in excellent order, that the Corporation were about to apply the bye-laws for the regulation of furnished nightly lodging-houses to tenement dwellings, by memorializing that body, and threatening many

* Read at Evening Scientific Meeting of Royal Dublin Society, May 28th, 1866, by E. D. Mapother, M.D., Professor of Hygiene, Royal College of Surgeons, Ireland; Medical Officer of Health for Dublin.

of its members with opposition at the next election, and by appeals to the police magistrates, they have as yet to a certain degree impeded us, notwithstanding the deplorable state of houses, such as I have exemplified in Gill-square and Bow-lane. On Wednesday last, however (the question having been argued by most eminent counsel), the magistrates decided in favour of the Sanitary Committee, and fined the Secretary of the Tenement Owners' Society for not having registered a house kept by him. So determined are their efforts to oppose us in carrying out the sanitary bye-laws that they have lodged an appeal to the Queen's Bench. They complain that the term "common lodging-house" is an opprobrious epithet to apply to houses set in tenements. The difficulties of keeping a registry of 9,000 houses with changing owners are so great, that I trust some future act may declare registration unnecessary for "tenement houses," as distinguished from "common lodging houses," in which such a system is required.

The bye-laws came into action on the 15th day of September, and the sanitary sergeants forthwith proceeded to enforce them. Those neighbourhoods which from experience were known to be most filthy and unhealthy were first visited, a copy of the bye-laws was posted in each house, and a familiar explanation of their provisions was given to each occupier of a tenement in it. In many instances the improvements which the sanitary sergeants suggested were carried out; in others they were resisted, and the owners were accordingly summoned. The police magistrates, however, adjudged that registration of each of these houses as a public lodging-house was necessary before conviction for any sanitary deficiency could be obtained. The registration of these houses, which number about 9,000, has caused considerable delay, and occupied the time of the staff for the first four months. I should mention that the visits of the officers were always most gratefully received by the poor tenants, and the allegation of the house-owners as to their being intrusions on their privacy and liberty were quite unfounded. During the eight months the act has been in operation 8,974 houses have been visited, 92,707 sanitary defects discovered, and a larger proportion of them corrected.

It is most gratifying to know that in the amended sanitary legislation which the Government have promised this session, the power of regulating tenement houses will be extended to all other Irish towns, as well as the power to prevent overcrowding as at present possessed by English acts. The act for the inspection and regulation of lodging-houses in England, obtained by Lord Shaftesbury, was followed in 1851 by the act to encourage the establishment of lodging-houses for the labouring classes, which provided that in towns of 10,000 inhabitants the local authority might borrow money from the Loan Commissioners for the purpose of building wholesome dwellings for the labouring classes. The desire to improve the condition of the operative classes in English towns is so general that I was surprised and disappointed to find that the act has been only taken advantage of in one instance during the fifteen years it has existed. In that instance (Huddersfield) the success has been remarkable. In 1864 it provided for 40,928 nightly inmates at a profit of £90 14s. 1d., and in thirty years the establishment will be the property of the Town Council, principal and interest having been paid. This act being thus a dead letter, the "Labouring Classes Dwellings Act" (just passed through the efforts of Mr. Childers) extends the granting of loans for this purpose to public companies and to individuals, who can offer fit security at 4 per cent., and repayable over forty years. A similar bill for Ireland, introduced by Mr. Childers and the Attorney-General, has obtained a third reading, and it possesses a valuable additional clause, providing that buildings, ruinous or dilapidated because of defect of title, may be sold in the Landed Estates Court.

Such acts are perfect as permissive enactments, but for reasons I will just now mention I fear that, as in the case of the Act of 1851, the supineness of municipal bodies and landed proprietors will to a great extent render them nugatory.

In 1856 Sir W. Somerville and Mr. G. A. Hamilton obtained an act which much facilitated the improvement of labourers' dwellings by granting the power to the landlord to recover possession under the Summary Jurisdiction Act of any tenement or cottage of a labourer, which, having been previously provided with every sanitary appliance had fallen into dilapidation. The same member, after some unsuccessful efforts, procured the enactment of the statute, sanctioning the granting of loans on most favourable terms to landed proprietors for the erection of agricultural labourers' dwellings, and the Commissioners of Public Works, to whom the management of the statute was entrusted, published regulations and specifications for the work. They also offered plans for the buildings, to which, how-

ever, the proprietors were not bound to adhere. No loan was to be granted for repair of old houses, the sum was to range between £200 and £1,000 for any one person, and no larger sum than £60 was granted for each cottage, one-fourth that sum being added by the landlord, who was also obliged to provide for each dwelling a properly-drained privy, ashpit with puddled walls, and yard. Most glowing anticipations were entertained as to its effects in improving the wretched habitations of our peasantry, but I regret to say that they have been realized to a very inconsiderable extent. More than half the time of the act has run (for it is to cease in 1870), yet, according to the last report of the Commissioners (1865), but nine loans, amounting to £4,900, has been sanctioned for dwellings completed. If £60, the usual loan, be divided into this, it may be supposed that about 80 cottages have been erected. Considering that there were in 1861 at least 200,000 cottages requiring to be rebuilt, and that the overcrowded state of labourers' dwellings is so notorious, it is much to be deplored that landed proprietors have not taken advantage of this admirable enactment in a degree at all adequate to the wants of their tenants. From the same report it appears that eighteen loans, amounting to £6,290, were sanctioned, but not proceeded with, and that sixteen, amounting to £8,800, had been about half completed.

A stroll over the Hill of Howth will practically convince any one of the advantages of the act; in few parts of Connaught could more wretched hovels be discovered than existed here some years ago. Now their places are taken by several neat and wholesome dwellings for the labourers, which are set at highly remunerative rents. The cottages are kept in excellent order, and the same gratifying report may be made of many others of those erected under the act.

Many counties—for example, Galway, Mayo, Leitrim, and Roscommon, or nine-tenths of the western province, which most sadly require improved dwellings—have never had a loan granted, no application, I presume, having been made by the owners of the soil.

In the working of the Act there is a serious difficulty, which, I trust, may be removed by future legislation. I can best explain it by an example. A landed proprietor in the south, having a large tract of unimproved land, let it to good tenants in small holdings, and granted long leases. His property has been vastly improved, and his tenants aided in the safest way. Instead of being rewarded, however, by the benefits of this act, he is ineligible from receiving loans under it by the fact of having given leases, and further, the tenants are incapacitated by the smallness of their holdings from seeking the responsibility of a loan of £200, the least to be advanced under the Commissioners' regulations. Scotland has enjoyed a similar act, which has been largely taken advantage of by landowners there. Until Mr. Childers' Act of this Session, landed proprietors in England had not similar privileges.

Throughout this country there are a few large landed proprietors who have interested themselves in the improvement of their labourers' dwellings before this act had been passed for Ireland, and the pretty and healthful cottages at Loughcrew, Clermont-park, Enniskerry, and Santry, occur to me in illustration. The Royal Agricultural Society has aided the good work by offering several gold and silver medals for the erection of the greatest number of newly-built labourers' cottages, or of improved cottages, in each province, or county, or district of its local branches. There is also the Leinster challenge cup, for the person who, during the year, shall have erected the greatest number of improved labourers' cottages in any part of Ireland. Stimulated by these rewards some hundreds of cottages have been built and put in competition, as appears from the yearly reports of the Society.

With regard to the plans on which these dwellings should be constructed, I will not, of course, attempt to enter into details, but I exhibit these models from the Agricultural Museum of our Society representing some which have been erected, and these elevations and plans for a pair of labourers' cottages have been drawn by my brother, Mr. E. D. Mapother, C.E., of Louisville, U.S. They are adaptable for a small or large family by extension of the partitions, and, as all ornament is omitted, the expense would range between £60 and £75 each, every sanitary requisite being provided.

These other plans are being carried out on the premises of Messrs. Walpole, Webb, and Bewley, and at Bray under the direction of Mr. C. Georhegan, architect, and are intended to accommodate four families in each building.

There are also on the table several valuable plans which have been kindly lent to me by Mr. Barry, Commissioner of Fisheries, who has laboured longer and more energetically on the subject than any one

with whom I am acquainted. A friend has informed me that cottages are made for a very small sum in France, by moulding in wooden shapes the scrapings from the streets, but I fear that, like the mud cabins, they would not allow permeation of air. In London and other great cities the greatest advantages with respect to health, prosperity, and morality, have followed the erection of improved lodging-houses and family dwellings for the working classes. They have been in many instances highly remunerative, even up to 14 per cent. on the outlay. In other cases where the noble benevolence of Mr. Peabody and others justified a greater expenditure than could be recouped in rents, the return has been as low as 3 per cent. Perhaps the Cromwell, Tower, Colden, and Stanley buildings of the Industrial Tenement Company, which accommodate 200 families on the open staircase principle, may be taken as a medium. The profit from these has ranged from 6½ to 9 per cent.

Much has been done in London towards providing fit dwellings for the humbler classes; but so great is the aggregation of people reared in the country, and so vast the demolition by railway and other works, that overcrowding is most excessive and typhus is yearly increasing. Mr. Thomas Hughes was, therefore, justified in moving this week in Committee on Railway Clauses Bill, that compensation should be given to tenement bolders where more than fourteen houses in a parish have been removed, and that the company should provide wholesome dwellings in place of those removed, and should have compulsory power of taking sites for the purpose. He is favourable to the system of providing dwellings out of the city, the railways to provide cheap trains. This principle has been largely adopted in France, and, as far as it has been tried in London, it has succeeded. In Irish cities the condensation of population is not so great as to need this. In that comprehensive and delightfully written book, "The Homes of the Working Classes," by Mr. Hall, there are most interesting descriptions of Saltair, Akroydon, the family at Guise, and the cités Ouvrières of Mulhouse, where most admirable villages have been constructed for manufacturers' workmen.

In Edinburgh, sixteen buildings accommodating 847 families have been erected, and they have all been pecuniarily successful.

In this city something in this direction is at last about to be done; the Industrial Tenements Company (limited) has just been established with a most influential directory, who have entered into the movement in a spirit of commercial enterprise, which alone can make the project remunerative, and on a scale adequate to the wants of our labouring population. From their prospectus I make the following extracts:—

"This Company has been formed for the purpose of remedying an evil that exists in the city of Dublin, and of providing for the poor and labouring classes tenements in every respect superior to their present unhealthy and miserable dwellings."

"The Company propose to acquire, by purchase or lease in the city of Dublin, old but substantial houses, which, owing to the decline of the locality in which they stand, can now be purchased or obtained on lease for long terms of years on advantageous terms, and by an economic outlay fit up these houses in tenements, providing each set with all sanitary requirements, thereby ensuring to the labouring man the elements of health, cleanliness, and comfort."

"The Company also contemplate erecting improved dwellings on the principle adopted with such signal success in London, Edinburgh, and all the leading cities of Europe."

"There are at present 9,000 houses let in tenements throughout the city of Dublin, in very few of which (if any) is the sanitary condition of the occupant cared for, and in nearly all of which the common decencies of life are lost sight of, whilst in most cases the rents paid for these tenements are exorbitant for the accommodation afforded."

"From the working of the improved dwelling companies in London, it has been found that the artisan and labouring classes are most punctual in the payment of their rents, and that every vacant tenement is eagerly sought after."

"The Company have ascertained that there are most suitable lots of houses in the city of Dublin that can be obtained on advantageous terms."

"The preliminary expenses are confined to the actual outlay incidental to the formation of the Company, no promotion money or any payment of a like nature being sanctioned by the articles of Association."

"The promoters have been induced to divide the capital into £10 shares, in the hope of inviting the artisan to invest his savings in the undertaking, and thus give him an additional incentive to promote the prosperity of the Company."

The financial success of improved dwellings erected in this city by Mr. Thomas Vance, Dr. Evory Kennedy, and Mr. Lindsay, has been remarkable, and there are always many eager applicants for tenements when vacant, which facts augur well for the success of the company.

The most important measure in regard to the subject ever introduced is that which Messrs. M'Cullagh Torrens, Locke, and Kinnaird brought in on the 20th February. It is entitled "A Bill to Provide better Dwellings for Artisans and Labourers," and applies to any borough or district in England to which the Public Health Act has been granted, or any place in the metropolis governed by a vestry. It provides that upon application of twenty ratepayers of any town, parish, or district, or by reso-

lution of the local authority whenever the death-rate for three successive years shall have been over 3 in the 100, the Home Secretary shall send an inspecting architect to inquire into the sanitary state of any street, the number of persons living in it, the space and accommodation afforded, and the steps necessary to obtain sufficient healthful houses for the inhabitants. His report shall be laid before the local authority, published within fourteen days, and unless within a month the local authority shall prove to the Home Secretary that the improvements are not needed, he shall order them to be executed within a reasonable time. The dwellings to be constructed in lieu of those condemned shall be built with every sanitary accommodation, and so as to afford 350 cubic feet of space for every occupant. For these buildings the Loan Commissioners may advance money on the security of the rates at three and a-half per cent., to be repaid within thirty years by equal yearly instalments. The local authority is to have power to take land or sites for buildings, giving compensation to the owners, and is to manage the improved dwellings. From this latter responsibility they will be relieved after three years, by a clause which Mr. Torrens has undertaken to insert. I think some clause empowering the authorities in very condensed populations to convert the sites of the condemned houses into open spaces, is very desirable, the displaced inmates to be provided for in suburban districts connected with a railway at penny fares.

The compulsory principle on the occurrence of a fearful death-rate is the peculiar and valuable feature of this bill, and without it no considerable amount of improvement will be achieved in the dwellings of the industrial classes. This is conclusively shown by the facts I have before mentioned, namely, that the Loan Act in England has in fifteen years procured the building of one house, and the Irish Loan Act has in six years been instrumental in the building of some eighty cottages. As the former failure, and the want of sanitary improvements in Irish towns, is attributable to the apathy and mistaken parsimony of local authorities, I rejoice that in the "Labouring Classes Dwellings (Ireland) Act" it is provided that loans may be also granted to public companies and estates individuals. So ill understood and so uncared for is the condition of the humbler classes in towns, that when that mild and permissive measure was passing through committee it was characterised as "a monstrous bill" by an Irish county member. Mr. Torrens' bill has been referred to an admirably chosen Select Committee, who have not as yet reported. Meanwhile thirty-seven bodies have petitioned in favor of it, and two against. The Dublin Corporation and the Irish Medical Association, have petitioned for its extension to Ireland.

A joint committee of the Society of Arts and the Social Science Association has prepared a bill entitled "The Improvement of Dwellings for Labourers and Artisans Act, 1866," which Mr. Charles Buxton is to introduce. It gives compulsory powers to corporations to take land and build dwellings, the Home Secretary sanctioning the steps and the advance of loans for the purpose. It contains the usual selfish clause, "This Act shall not extend to Scotland or Ireland." It seems to me but to complicate attempts at legislation, for Mr. Torrens' bill better provides for the same objects.

The metropolis, Liverpool, Birmingham, and other large English towns possess local acts for the complete regulation of their buildings, and the smaller towns are similarly provided for under the bye-laws of the Local Government Act, 1858. Under these powers no house can be built unless its walls be of certain thickness proportional to height, unless sufficient space be allotted for a yard, unless the lower storey be efficiently drained, unless the roofs and chimneys be properly and safely constructed, and unless every habitable room be of a certain height. These provisions are placed under the supervision of the district surveyor. Such a bill for Dublin, on a very comprehensive scale, was prepared in 1863 with the aid of our Borough Engineer, but was never introduced. That it is required, a single example out of hundreds of ill-constructed, unimprovable buildings will show.

In Stephen's-place, which leads from Upper to Lower Mount-street, the houses are built back to back, without any thorough airing, yard, or privy. Filth must be therefore cast on the roadway. The clergymen and inhabitants of that aristocratic neighbourhood have justly complained, but the remedy is not easy. The placing of a water-closet, which the poor would soon disarrange, is not safe in an unaired house, and as the houses are owned by different persons, the Corporation can scarcely require that one shall be converted into a privy for the use of the occupiers of all the others, as we have done where one person owns several cottages. In other houses without yards or accommodation, filth has been accumulated to a vast extent in the cellars or back kitchen.

The Local Government Act is most useful with regard to new buildings, but does not interfere with those already erected, no matter how unwholesome, so that this addition would be desirable if the act is extended to Ireland.

In Glasgow, many of the courts and houses are ill constructed, and so overcrowded are they as to allow but the average of three square yards to each person. A bill, however, for improvement, with compulsory power, has passed unopposed through Committee, by which the rate-payers consent to tax themselves at sixpence in the pound for five years, and threepence for the ensuing ten years. It is to provide that the improvements shall not go on so fast as to render houseless the present occupants, but that reconstruction shall go on *pari passu* with demolition. In Liverpool, under the Sanitary Amendment Act, 226 houses in 189 courts were removed or altered removed during last year. As many other great sanitary improvements have been achieved, the only circumstances which seem to account for the still excessive death-rate of that city is the extreme condensation of its population. There should be also some efficient controlling authority for the laying out of towns and streets. While the rectangular form, with due regard to meteorological circumstances, so common in American cities, is most healthful, our towns, as will be seen from these index maps, consist of angular streets of such devious courses as to appear rather the result of chance than design, and blind courts, which are most insalubrious. As yet scarcely any town in Ireland can boast of a wide street planted with trees.

In France, the dwellings of the operative classes, as well as all other sanitary matters, are directed by a special branch of the state, named "Commission de Salubrité Publique," and a most effective machinery is organized to see that all houses are built on proper plans, and are preserved in good order.

Some very conclusive arguments have been put forward that public health committees of the Privy Councils of these kingdoms should be charged with the control of town authorities, as the Poor-law boards are with that of the local guardians. As precautions are often neglected during freedom from epidemics, inspection is then needed to a greater degree than even they are among us. But in many places it is only when the selfish fear of contagion creates a panic, or when the pestilence has already invaded, that active measures are taken, and in the latter case their usefulness is very doubtful.

I will sum up in a very few words what I hope for as necessary to improve the dwellings of the poor, and thereby raise immensely the standard of public health:—

1st. The constitution of a central controlling authority for local government and sanitary improvement.

2nd. The enactment of a comprehensive building code; the passing of local acts being expensive is often avoided.

3rd. That our sanitary laws should be compulsory in cases of flagrant neglect; the permission to act is now very generally construed as permission not to act.

4th. A generally diffused desire on the part of employers and landowners to provide for the healthful wants of their dependents, and this will grow according as our nation prospers, and according as the masses are educated in the knowledge of the laws which regulate the well-being of their own bodies.

That the subject I have thus so imperfectly submitted to you is closely connected with our prosperity, cannot be more forcibly expressed than in the words of the Devon Commissioners, which are painted in large letters over the entrance of our Agricultural Museum: "While the dwellings of the general body of the people are surrounded by the elements of disease, and are damp, cold, dirty, and comfortless within, so long will the country be destitute of even the semblance of general prosperity."

Mr. H. Maclean, T.C., highly approved of the suggestions put forward in the paper read by Dr. Mapother, and concurred in the opinion expressed as to the necessity that existed for carrying out sanitary improvements in this city. He hoped that the information given in the paper would stimulate them to energetic action. The lamentable state of the dwellings of the poor in Dublin had been verified by every one of the dispensary doctors in the city, who were unanimous in opinion that the recent bye-laws of the Corporation were imperatively needed.

Mr. N. Daly said that Dr. Mapother had placed before them a practical solution of sanitary improvements; and the matter had so far engaged the attention of the capitalists, that measures were being taken to improve the dwellings of the poor in the city. It was to be hoped that the Corporation would follow up their efforts to enforce the bye-laws for the im-

provement of the sanitary condition of the dwellings of the poor.

Mr. R. H. Jephson, after complimenting Dr. Mapother on his able paper, observed that hitherto we had been dealing too sentimentally with the questions of the improvements of the dwellings of the poor;—it was time that something practical be done. It was a great error to suppose that Government should provide improved dwellings; they were no more bound to do so than to supply furniture and clothes. Having noticed what he considered were defects in recent attempts to legislate for the improvement of labourers' dwellings, Mr. Jephson dwelt upon the benefits which, he believed, would accrue in that direction from the operation of building societies.

Mr. Peggs spoke of the wretched condition of the poor of London, resulting from overcrowding, and endorsed all that had been said by Dr. Mapother. It was impossible to preserve the morality of a community if the ordinary rules of decency were not observed. The speaker then referred to the measures which had been introduced into Parliament with reference to this question, and showed how the matter stood in London. He believed that Mr. Torrens bill was conceived in the best spirit, and intended to do a great deal of good, but he feared the mistake it committed was to vest in corporate bodies the power to carry out the provisions of the bill. Mr. Buxton's bill seemed the best. All that was necessary under that measure was proof that a certain number of dwellings were uninhabitable, and that there was a want of workmen's dwellings. These facts being verified to the Secretary of State, he was empowered, upon receiving guarantees, to give loans to companies to erect new blocks of dwellings.

Mr. Mapother, C.E., briefly referred to some designs and plans of houses which he exhibited, and explained their advantages.

Dr. Steele, Mr. N. Robinson, Mr. Dillon, and the chairman having briefly expressed their views on the subject, Dr. Mapother replied, after which the proceedings terminated.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the Ordinary General Meeting of the Royal Institute of British Architects, held on Monday, the 30th of April, 1866,

A. J. B. BERESFORD HOPE, M.P., President, in the chair.

The Royal Gold Medal for the year 1865 was presented to M. Digby Wyatt, F.S.A., of 37, Tavistock-place, Tavistock-square, Fellow, and the other medals and prizes as follows:—

To Mr. Charles Heuman, jun., of 7, Beresford-place, Croydon, S., the Institute Medal, with five guineas. To Mr. Arthur Baker, of 9, Inkerman-terrace, Kensington, W., the Institute Medal. To Mr. M. H. Renault Maignin, of 21, Nottingham-street, Regent's-park, the late Sir Francis E. Scott's prize of ten guineas. To Mr. J. S. Nightingale, of 42, Parliament-street, the student's prize in books.

The following paper was read at the meeting by Professor Robert Kerr, Fellow: "Remarks on the Evidence of Architects, on the Obstruction of Ancient Lights, and the Practice of Proof by Measurement—with reference to recent cases in the Courts of Equity."

The discussion on Mr. Kerr's paper to be commenced by Professor T. L. Donaldson, past-President, was adjourned till Monday the 28th of May.

At the Annual General Meeting held on Monday the 7th May, 1866, A. J. B. Beresford Hope, M.P., President, in the chair. The following office-bearers were elected for the ensuing twelve months:—as President A. J. B. Beresford Hope, M.P., Honorary Fellow; Vice-Presidents T. Hayter Lewis, D. Brandon, J. Ferguson; Honorary Secretaries, John P. Seddon, Charles Foster Hayward; Honorary Secretary for Foreign Correspondence, C. C. Nelson; Treasurer, Sir W. R. Farquhar, Bart.; Honorary Solicitor, Frederick Ouvry; Ordinary Members of Council, A. Ashpitel, E. M. Barry, A.R.A., F. P. Cockerell, J. Gibson, E. B. Lamb, E. Walsh, Wyatt Papworth, J. Peacock, J. Spencer Bell, A. Waterhouse, J. Whichcord, W. White, M. Digby Wyatt; Country Members, M. E. Hadfield, Sheffield, K. M. Phipson, Norwich; Auditors, E. H. Marteneau, Fellow, T. H. Watson, associate; as examiners under section 33 of the Metropolitan Building Act, 1855, the three Vice-Presidents and Messrs. C. C. Nelson, A. Ashpitel, C. Fowler, jun., J. Gibson, J. Jennings, H. Jones, E. Nash, H. Oliver, J. W. Papworth, J. Spencer, — Bell, J. Whichcord, G. B. Williams, S. Wood, and the two Honorary Secretaries.

Votes of thanks were passed for the services of the President, Vice-Presidents, Honorary Secretaries, Ordinary Members of Council, and the other office-bearers during the past year.

At the Ordinary General Meeting, held on Monday 21st May, 1866, David Brandon, F.S.A., Vice-President, in the chair. A very interesting paper on Battle Abbey and its conventual remains was read by the Rev. Mackenzie E. C. Walcott, M.A., F.S.A.

SHAM AND REAL FIREPROOF BUILDINGS.

(Continued from page 132)

Fox and Barrett's floors consist (for houses or offices) of parallel cast or wrought iron joists, with the ends built into the walls. These must have an inverted L-form, i.e. must have a shoulder or flange along the bottom edge. Transversely in between the joists, and resting simply upon this flange, short stiff puncheons of timber are laid in. The joists being from 2 to 3 feet apart (let us say), those pieces of wood are from 1½ to 2 inches square, and are laid parallel to each other, with an interval of 1½ to perhaps 2 inches between each pair. Two or three inches of coarse mortar is now spread upon top of these wood slips, and some nails are driven into the lower arrisses, or sides of the slips diagonally from below, to enable them to act as ceiling laths, and to hold up the plastering to be laid on below to form the ceiling, which is also to cover the bottoms of the iron joists. When the first coat of mortar laid on top of the wood laths is hard, a layer of from 4 to 6 or 8 inches of concrete is laid and beaten smooth on top. Over this is laid either tiling or any composition floor or ordinary wood flooring, secured to square pieces of scantling bedded into or laid upon the concrete beneath. The patentees, in their description, say these puncheons, or slips, may be of slate, tile, metal, or other material; we believe, however, that practically timber has been employed in most cases, if not in all.

It is alleged by the patentees that this form of flooring was first invented, or at least employed (now about thirty-one years ago), by Dr. Fox (one of the patentees) in the erection of his own house and private lunatic asylum at Northwoods, near Bristol. We shall not say anything here about the claim to originality, which is by no means devoid of doubt.

In the account given of the method above adverted to, the commendatory opinion of a "Mr. Christopher, an architect and surveyor of metropolitan buildings," is given as to the advantages of the plan; as usual in such cases, he does not say one word as to any possible disadvantages. His points of commendation are:—

1. *Fire-proof.* Perfect in every room.
2. *Economical.* Rather less costly in first construction (than common joisted floors, namely), and much less so in use, from being
3. *Indestructible.* There is nothing to decay or liable to injury, the materials being all but imperishable.
4. *Comfortable and cleanly.* The floors being perfectly level and without crevices or hollows, there is no possibility of lodgment of vermin or dirt, and there is an absence of draught, and freedom of dust.
5. *Perfectly dry and hard.* The polished surface produced by the simple dressing of linseed oil, is incapable of any absorption of any moisture; the water runs on it as quicksilver does on mahogany.
6. *Smell and sound proof,* as regards all ordinary noises, being of the nature of the best pugged floors, and nearly as impervious as a wall; this being of great advantage in rooms over kitchens, &c.
7. *Admitting of the best plans of warming and ventilation,* from being fire-proof throughout.
8. *Damp-proof.* Even when the floors are constructed on the ground, without joists, a billiard table, musical instruments, &c., have been kept for years without injury.
9. *Carpets, &c.,* are found to last much longer.
10. *The roofs* thus made are simple and inexpensive, &c.

As we are called upon to condemn, we have thus given, in the very words of the patentees' eulogist, the whole catalogue of virtues that he was able to make out for the plan. We should add that as the patent is long since expired, we do Messrs. Fox and Barrett no commercial injury in freely discussing their plan.

Now as to the *comfort and cleanliness*, which are neither more nor less than those of a common joist and ceiled floor; the *perfectly hard and dry*, which does not apply to any but the mortar and linseed oil, inapplicable for any comfortable dwelling in our climate; the *smell and sound proof*, which, to our own experience, are far from existing in them in these Westminster Chambers, where every sound is transmitted through each floor almost as though it were but one of naked boarding; the *damps*, the *carpets*, and the *warming and ventilation*, as to which we have only to say that here these floors are as cold and comfortable under foot as every boarded floor laid upon a thick plate of concrete must of necessity be, and in which respect Fox and Barrett's floors are no worse than other floors not all of wood and plaster, or not warmed beneath artificially, *must* be. Passing all these, as beside our present purpose, we address ourselves merely to the first and third eulogies, and we take leave to deny the truth of both. Taking the last first, it is not a fact that there is "nothing to decay." Were the cross slips in practice made of hollow pipe tiles, or of slate sawed slips, or of iron laths, it might be more nearly true. These floors would then ap-

proach in nature the domestic and other professedly fire-proof floors in use in Germany and in France, which are a great advance above these now in question, though not fire-proof, and of which more anon. But here we have square puncheons or slips of fir timber for cross laths in actual, we believe we may say exclusive use; and these are not only liable to decay, but we are quite satisfied, will be found to decay before fifty years at the outside shall have passed, and then to endanger the heavy concrete and ceiling coming down about the ears of those below them.

It is quite true, and must not in fairness be lost sight of, that as years progress, the concrete will get *rather* harder and more coherent than during the first year or two, but not much; and, to counterbalance this, the constant expansion and contraction of the iron joists (whose co-efficient of expansion differs much from that of the concrete) will tend to break the bond of the concrete slab of floor; and the occasional fall of heavy weights, or of jumping, or of dancing on such floors, is sure to produce cracks or planes of transverse separation here and there; so that once remove wholly the support and bond of the timber laths, and it is impossible to say how soon pieces of such a floor may come down.

Most architects and builders are pretty clear upon the fact that timber confined in a *close and damp place* is placed in conditions the most favourable for initiating rotting. That this should assume the form commonly called, by a strange perversion of language, "dry rot," and that this should progress rapidly, it is necessary, not only that damp and a confined air, i.e., one richer than usual in carbonic acid, provided by the timber itself in decay; but that atmospheric air, also be present. While it cannot be denied that the timber here, however, at first dry, must be made thoroughly damp, being imbedded right into a stratum of wet concrete, it may be said, but air cannot get at it afterwards; it is all hermetically sealed up in plaster; the concrete will soon dry up, the moisture both in it and in the timber will evaporate, and the dry wood in the dry concrete, and closed up from the air, can never decay—it will be like a mummy coffin of gophyr wood in an Egyptian pyramid, sound after three thousand years. This is not to understate Messrs. Fox and Barrett's case at least. But is the timber *hermetically sealed up*? If so, how is it that it ever gets dry by evaporation? and as there is such a known thing, as the passage of gases and vapours through porous media, the laws of which, thanks to the master of the mint (Dr. Graham) chiefly, have been well investigated, and in virtue of which it is that even the said evaporation here does take place, so also is it certain that the timber buried here in the plaster will never want for air to help its decay. Were it not for this, timber would never rot when buried in dry earth, but we know it does. The Egyptian coffin escaped decay simply because, of the *two elements simultaneously necessary* to produce vegetable decay, viz., *air and water*, one, the latter, was never present. In the dry and torrid climate of Egypt, as in the midst of a heated sand bath, the wood was never directly moistened, and the air which year by year for centuries reached it was almost *desiccated* and dry. But in our damp climate, where the air, winter and summer in and out of house, is often saturated with dissolved vapour of water, and seldom drier than holding half the moisture due to saturation at its temperature, the air that is absorbed by the imbedded timber, must carry water vapour along with it, and by their joint agency the decay of these puncheons is inevitable.

But, again, are there any circumstances peculiar to these timbers tending to *promote* their decay. "Time is as a lambent flame," said Bacon, in his curious essay on the nature of heat; in this, in reality, anticipating by the prescience of his mind, rather than by direct observation, the germ of what Liebig has since developed as to slow combustion by oxidation, or as he calls it, "eremacausis," which is only another word for rotting, so far as it applies to vegetable matter.

Now no chemist is ignorant of the fact that any chemical agent, whose tendency is to produce oxidation when acting alone upon vegetable matter, starts into increased activity whatever tendency there may be in the vegetable itself to further oxidation by decomposition of air and water, i.e., to decay. Thus an alkali, in presence of any readily oxidizable vegetable body, tends to make the whole oxidate by atmospheric agency.

Now here the timber is buried up in wet lime concrete, the water in which is a saturated solution of caustic lime. The conditions are just such as must tend to set slow decay going, and once begun it will continue. If the floors continue damp long enough, and especially if there be any small spaces or crannies at the surface of the timber, due to ill filling or consolidation, or to retreat in setting of the concrete, actual *dry rot fungus* may be formed and spread slowly, perhaps, but unceasingly, until it has eaten up all that is soluble for it in the timber. But if there be none,

and though dry rot, as commonly understood, may not ever take place, still the timber buried up in close contact with lime concrete and mortar *must* decay, become brown, brittle, and at last crumble into dust, and leave nothing but a hollow chamber occupied by its ghost and ashes.

The proof of this is visible to any one that has eyes to see, and who will examine the state of the ordinary ceiling laths removed from any old dwelling-house where these have been long buried between ceiling below and pugging above, even though the latter be in the mild form of "clay pugging." Every lath will be found brown or nearly black to the very heart, if from fifty to seventy or eighty years old, and as brittle and trustless as so much snuff.

To this form must they come at last; it is but a question of time, and of no very long time, in Fox and Barrett's flooring. But what will be the condition of the timber, as respects combustibility, long before it shall have wholly decayed, by reason of the slow but incessant chemical changes going on in it, though hidden from all observation? It will have become eminently more combustible than it was at first, just as a sheet of paper that we scorch until it is brown before the fire ignites, at a temperature far below that at which we could have inflamed the same paper before being so roasted. So these timbers, browned by the slow oxidating scorch of "the lambent flame of time" in their caustic lime beds, will, in a few years, assume a condition such, that if heated where they stand in the floors to a temperature far below the igniting point of fresh timber, they will evolve combustible gases, and these, if supplied with air, will ignite at once. We have dwelt thus lengthily upon the question of the slow decay of these timbers (a matter but indirectly related to our subject), as bringing us with a proper preliminary understanding, to consider what must happen to one of these so-called fire-proof floors, supposing the ceiling of it to be exposed for some two or three hours (perhaps a much shorter time) to the heat and flame of a conflagration in the room below. We will not ask that the room shall be filled with any special combustibles, or in specially great quantity. We may suppose the favourable case for it, of only a large room full of large office furniture or fixtures, papers, bookcases, and the like, and with its own wood floors and window jambs and doors all fairly ignited, the glass of the windows more or less gone, and a tolerable draught established in the room.

These are the *circumstances* that would be encountered in the great majority of cases in buildings to which Fox and Barrett's plan is supposed applicable; for we imagine few architects, certainly no civil engineer, would advise its use for large stores, or for manufacturing or commercial buildings of great magnitude and more than domestic risks.

Well, then, for a time the ceiling would continue to get heated without much change; but presently, partly by the expansion of the iron girders, partly by its own unequal expansion, bound as its parts are, in between iron edges of girders, large clots of the ceiling would begin to crack and fall off. We may suppose, in favour of the plan, that though cracked it all held together for some time; at last, however, and before a very long time too, the 1½ inch of plaster ceiling below the timbers, and which alone interposes between these and the flames that lick the ceiling, will have got in some one or more places heated up to 400° Fahr., or a good deal more. The imbedded timber, predisposed to give off combustible gases, from the reasons we have already referred to, will at this temperature (or even a good deal below it) begin rapidly to evolve gases and vapours. These more or less completely pent up round the timber, by the ceiling and concrete, will acquire tension, and will cast off almost explosively great fragments of the ceiling beneath, and more or less of the concrete in immediate contact with themselves.

Who shall assure us that in one of these floors thus circumstanced, at the moment when not only all support or bond of the burning timber is removed, but when it has become an active agent of destruction to the inert matter round it, no piece of the remaining thin plate of concrete between any two of the iron joists shall get dislodged and fall, or shall not open large cracks up to the wooded floor next above it? Should such occur, the ignition of the wood floor above is certain to follow, and when the fire shall have thus reached the second room above, with a draught hole or holes established through from the first room below, the blast of the furnace becomes augmented, the whole phenomenon repeated with increased force and speed upon the next ceiling above, and so the fire spreads from floor to floor of whatever height.

In all this we have said nothing of what must happen to the whole combination of concrete, timber (if any still remains), and iron joists, when these shall have become seriously expanded and elongated. They will bend and become bowed towards the direction of the side or edge that is most highly heated—that is, they will *bow downwards* by expansion only. What is to become of the continuity of the concrete,

either with itself or with the walls under such circumstances?

We might pursue the matter further, but we think we have stated enough to prove even to a zealous patron of Fox and Barrett's construction that it is one not fireproof. It may delay the spread of conflagration in any ordinary domestic building; under most conditions it no doubt will so delay the progress of the fire, and in so far it is useful. But let neither professional constructors deceive themselves nor the public, by treating it and speaking of it as a method of true fireproofing. Affirmed to be such, it is simply a sham—one that circumstances have not yet publicly detected, but that only awaits the first "rousing fire" in a building so constructed to become dissipated in its own smoke.

We have yet to see, however, whether it be not possible to make a floor in some degree like the Fox and Barrett one, but freed from these great objections, whether we cannot do it at almost or quite as little cost per super yard, and to what such floors would be applicable; for very different structural relations must abide in domestic buildings and in great stores and manufactories to make these truly fireproof.

IRISH BUILDING NEWS.

ESTABLISHED CHURCH.

The Church of St. Paul, Moyglare, in the Diocese of Meath, was consecrated on the 15th ult. It is in the Early English style, and consists of a nave, chancel, and a tower, made available as a porch, surmounted by a spire. A triplet window in the east end contains in the central light Saint Paul, with Saints Peter and James the less on the right and left hands respectively. Four lancet lights in the west end are filled with figures of the four evangelists; over these is a rose window, also filled with stained glass. All the glass is by Wailes of Newcastle, and was presented by Mr. Woods, of Milverton Hall, and his father, George Woods, Esq. The floors are laid with Mawe's encaustic tiles. The work has been executed by Mr. H. Sharp, builder, of Kells, from designs by the late Mr. Edward M'Alister, whose melancholy death by drowning will be painfully remembered. The cost has been about £1,600, of which more than £1,000 was defrayed by Mr. George Woods. The balance of £600 was contributed in part by the Ecclesiastical Commissioners, and in part by Hans H. Woods, Esq.

A new glebe-house is to be built at Carragh, Co. Kildare. Mr. Joseph Maguire, architect; Mr. T. Holt, builder.

ROMAN CATHOLIC CHURCH.

The new stained glass window in the Angustian Church, Drogheda—a memorial one—is composed of seven lancet lights, extending over the entire east end of the chancel. Its centre light, measuring twenty-five feet in height, is occupied by a figure of Our Blessed Lord in majesty, seated upon the rainbow, with clouds and stars under the feet. The figure bears in the left hand the orb and cross, whilst the right bestows the benediction. This figure and all the others in the window are represented under lofty architectural canopies, the back ground of which is richly coloured foliage in geometrical patterns. In the same ope, beneath the figure of Our Lord, the crucifixion is represented, with the Blessed Virgin and St. John at either side, and above it a richly ornamented cross, with two angels standing by it in adoration. The Papal arms are placed in the apex of this light. The next figure in the order of precedence is that of the patron of the church, the great St. Augustine. He is represented as a bishop, with a book in one hand and the pastoral staff in the other. Lower down there is a group—one of the figures kneeling as if in the act of receiving the rules of the Order from its holy founder. The corresponding light contains St. Monica, the mother of St. Augustine, and the subject below relates to the historic scene where St. Monica, weeping, entreats St. Ambrose to intercede for her son, and where he, moved by her look of confidence and meek supplication, exclaimed, "It is impossible that the child of such tears should perish." In the upper portion of these two lights the Arms of the Order and of the Primate See of Armagh are respectively emblazoned. St. Nicholas of Tolentine occupies the open on the right of St. Augustine. The figure is clothed in monastic costume, and bears the emblematic star on the breast, with the crucifix and lily in the right hand; and underneath is a legendary group representing Saint Nicholas as being crowned by the Blessed Virgin and St. Augustine. The light corresponding to this ope is filled with a large figure of St. Patrick as usually represented, and below it a group alluding to his celebrated illustration of the mystery of the Holy Trinity. The armorial bearings of the Messrs. Gradwell and Chadwick, the donors of the window, are introduced into these opens. In the remaining two

lights are figures of St. Bridget and St. Thomas of Villanuova. The latter is painted as an archbishop, bearing the crozier and giving the episcopal benediction, whilst the former is dressed in the habit of the Order, and carries on her right arm a spinning-wheel, as the patroness of spinners. A particular interest is attached to this, the memorial figure—first, because the Messrs. Gradwell and Chadwick are eminent linen manufacturers in the town of Drogheda, and secondly, because the idea was suggested by an ancient and partially mutilated basso relievo of St. Bridget with the spinning-wheel, still to be seen at the entrance of the hermitage, in the grounds of Slane Castle. Taken as a whole, the window is a noble and artistic work; the colouring is most vivid and perfect, and the arrangement and grouping of the figures display a high order of taste and skill on the part of the manufacturers. It has been designed and executed by Mr. W. Wailes, Newcastle-on-Tyne.

GENERAL.

Mr. John Nolan is declared contractor for an extensive "mart," which is to be erected in Henry-st., Dublin, for Messrs. Hawkins, Robertson and Co. Mr. W. Fogerty, architect.

A Wesleyan Chapel to be built in Antrim, the internal dimensions being 50 feet by 24 feet; to be built with brick, having coloured ones interspersed; style, Decorated Gothic. Boyd and Batt, architects, Belfast.

A weaving factory to be built in Cootehill, from plans by the same architects.

The same architects have also prepared plans for an extensive soap manufactory to be erected in Portadown, together with shop, offices, and workmen's houses in connexion.

TENDERS REQUIRED.

By the guardians of the Ballymena Poor Law Union, for the erection of a new dispensary in Ballymena, Co. Antrim, to the 7th inst.

For erecting a Gothic villa at Warrenpoint, Co. Down, for Henry Newell Atkins, Esq. Mr. Andrew Weir, architect.

For erecting two two-storey houses in Ballymena, adjoining the Baptist chapel.

For buildings for the Newtownards Brewing Company (limited), to the 7th inst.

For re-flagging floors in the Belfast Union Workhouse, to the 5th inst.

By the Hollywood Gas Company, for the performance of such artificers' work, and the supply of such articles as the company may require, from June 4th, 1866, to April 30th, 1869, inclusive. Time for tenders, 4th inst.

By the Cashel Town Commissioners for placing a new roof on the Town Hall, and making such other improvements as are laid down in the plans and specification of the architect, Mr. J. E. Rogers. Tenders to 11th inst.

For the erection of a County Hall at Carrick-on-Shannon, according to plans &c., by Mr. J. S. Butler, architect, to the 8th inst.

For the erection of a reredos in the Roman Catholic church, Kilkenny, Mr. J. S. Butler, architect.

For the erection of schools, dwellings for teachers, and out-offices, on the property of the Earl of Derby, at Monard, Co. Tipperary, Mr. W. S. Cox, Limerick, Tenders to 22nd inst.

MONUMENTS, STATUES, ETC.

The statue of the late Earl of Eglinton, which has been hoisted on its pedestal, on the north side of St. Stephen's-green, and which is to be publicly inaugurated immediately, is by Mr. McDowell. It is a full-length figure, standing erect, and has been cast in bronze, by Messrs. Elkington and Co., Birmingham. The cost of the whole, exclusive of the amount required for improving and altering the surrounding grounds, is about £2,000. The inscription, which will be in large sunk letters, and gilt on the granite die is to be, "Archibald William, Earl of Eglinton and Winton, K.T., Lord Lieutenant of Ireland in 1852 and 1858, 1859."

The erection of a memorial to the late Most Rev. Dr. Dixon, has been proposed for Drogheda. A subscription list was opened at a meeting held on the 27th ult., and nearly £300 promised by a few of the admirers of the late Primate. An organ and a Caen stone pulpit for St. Peter's, West-street, have been suggested as the form which the memorial should take.

MISCELLANEOUS.

The Macroom Railway is now open for public traffic.

Newry has appointed a sanitary officer, with full powers to enforce better regulations for the improvement of the town.

The Dublin Corporation have granted a sum of money not to exceed £3,000 for completing the Cattle Market, and providing additional accommodation for English salesmasters who intend transferring their business to Dublin.

The Northern Banking Company have purchased a site at Cardonagh, Co. Derry, and intend erecting a branch bank there.

A volume, entitled "The Danes in Ireland," of which the text is Irish, is being edited, with an English translation, by the Rev. Dr. Todd. The *Chronicon Scolorum*, also written in Irish, is being prepared by Mr. Hennessy.

At last, says the *Scottish Farmer*, there is a chance of "utilizing" the Irish bogs. The process adopted at Horwich for making peat fuel is really cheap and efficacious. The peat is not dried, powdered, and pressed into cakes, according to the old plan, but milled into a pulp, then made into slabs, dried, and if necessary baked into charcoal. The acetic acid oils of various kinds, grease, &c., given off more than pay expenses. All except the digging is done by machinery. The peat cake, called "torbite," has had a fair trial. On the rail from Belfast to Portrush it gave an excess of steam, with no smoke, and saved one quarter of the weight in fuel. At Bolton it welded iron more quickly than coal does; and at Horwich it worked a stationary engine with greater effect.

An American journalist says:—"Made into a thin solution like whitewash, Portland cement gives wood-work all the appearance of having been painted and sanded. Piles of stone may be set together with common mortar, and then the whole washed over with this cement, making it look like one immense rock of grey sandstone. For temporary use a flour barrel may have the hoops nailed, so as not to fly apart, and the inside washed with ten cents worth of Portland cement, and it will do for a year or more to hold water. Boards nailed together, and washed with it, make good boat water tanks."

Mr. J. H. Dowsett, a gentleman connected with the *Surrey and Hants News*, while crossing the other day the bill near Farnham known as Caesar's Camp, was examining an extraordinary-looking piece of stone, hid some distance in the earth, when he had occasion to remove another stone, and in doing so he heard a jingling sound like that of metal, and his attention was directed to an old silver coin. Further search was made, and several others were found near the same spot, which proved to belong to the Roman period of domination in Great Britain. The majority of the coins consist of *sestertii* of the emperors Diocletian and Constantine in an excellent state of preservation, and the fact that they belong to different reigns seems to afford some ground for the conclusion that a Roman station really existed in this locality, as has been affirmed by various antiquarians.

A foundry of spacious extent has been constructed at Mayfield Factory, Portlaw, immediately adjoining the mechanical department, and is now at full work, turning out ten tons of castings every week, as large, if not a larger, quantity than at any manufacturing establishment in the three kingdoms. The building is fitted up with furnaces and metal chambers upon the newest principle, and one of Schiele's powerful patent fans has been erected. This portion of Messrs. Malcomson's works is conducted upon that scale of efficiency for which the Mayfield factory is remarkable; the machinery in connection with it at once proves the determination of the proprietors to avail themselves of the best appliances for manufacturing purposes. This establishment gives employment to nearly 2,000 persons.

TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

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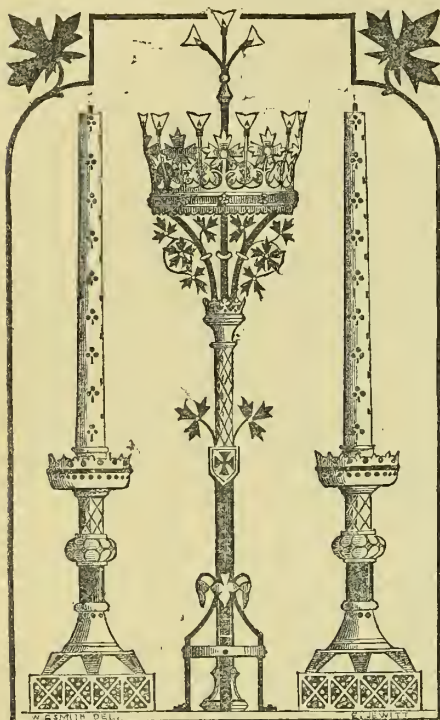
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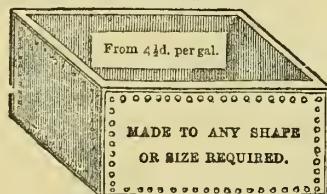
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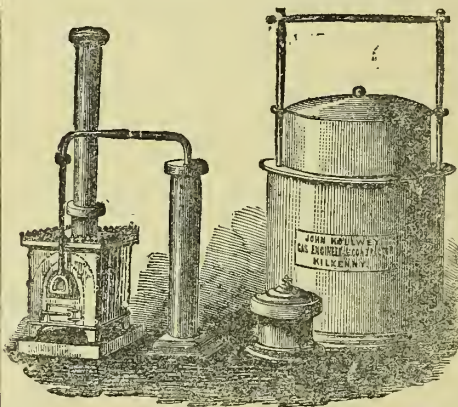
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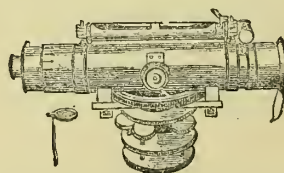
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From **WILLIAM TITE, Esq., M.P. for Bath, and Architect of the Royal Exchange, London.**
House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have used both the sorts of Cement manufactured by your firm, and that of Messrs. Francis & Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good. I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant,
Messrs. White & Son. (Signed) WILLIAM TITE.

From **H.O. MINNIE, Esq., Surveyor to Board of Ordnance, London.**
War Office, Pall Mall, London, S.W.,
8th March, 1864.

GENTLEMEN,—In reply to your request, I have much pleasure in stating my favourable opinion of the quality of your Portland and other Cements, which have been extensively used in the Public Works connected with the War Department at home and abroad, especially in several of the fortifications now being erected in this country. On all occasions within my knowledge the quality has been equal to that of any other manufacturer, and has given great satisfaction.—I am, gentlemen, your obedient servant,
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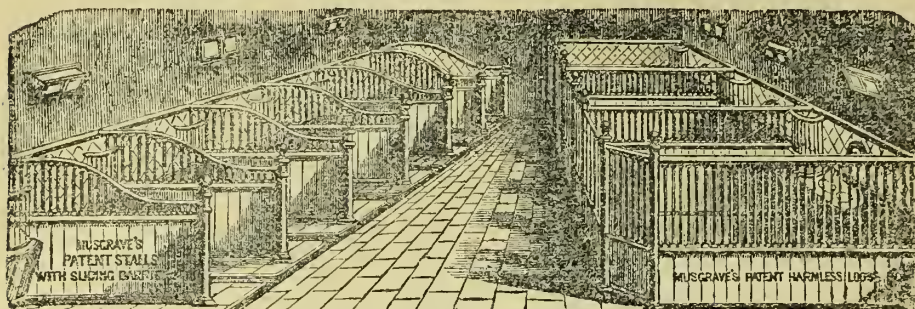
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1st & 15th
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ILLUSTRATION:

NEW WAREHOUSE, BRIDGE-STREET, BELFAST.

Contracts.

WAR DEPARTMENT CONTRACT. NOTICE TO GASFITTERS.

Office of Commanding Royal Engineer in Ireland,
Dublin Castle, 5th June, 1866.

TENDERS are required from competent persons for Works to be done in Laying on Gas to the BARRACKS AT NEWRY, IN THE BELFAST DISTRICT.

Persons desiring to Tender for the above Work must leave their Names, and references as to competency, at the Office of the Commanding Royal Engineer in Ireland, Dublin Castle, or at the District Royal Engineer's Office, Belfast, where forms of Tender and every information can be obtained, on or before Monday, the 25th day of June, 1866.

The Bills of probable Quantities of materials and of work required to be performed will be forwarded to each Party. The Secretary of State for War reserves the power of rejecting all or any of the Tenders.

The Tenders must be addressed, under cover, to The Director of Contracts, War Office, Pall Mall, London, S.W., so as to be received on or before Saturday, the 30th day of June, 1866, marked in the corner of the envelope, "Tender for Gas Fittings at Newry Barracks."

BOARD OF PUBLIC WORKS. NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be received up to the hour of 12 o'clock, noon, on the 25th of JUNE, 1866, for BUILDING

BOAT-HOUSE, CARPENTER'S WORK. SHOP, ENCLOSURE WALLS, LAUNCHING SLIP, &c., for the COAST GUARD STATION at DONAGHADEE, COUNTY DOWN, according to Plans and Specification to be seen on application to William Gray, Esq., 6, Mount Charles, Belfast.

Each Proposal is to be for a lump sum, and must be accompanied by a separate Detailed Estimate giving Quantities and Prices, and be endorsed "Tender for Boat-house, &c., Donaghadee."

Both Tender and Detailed Estimate should bear the Name and Address of the Proposer on the back.

Printed Forms for Tenders can be had from Mr. Gray. N.B.—Persons Tendering should send in Testimonials as to character and competency, unless previously known to the Board.

By Order of the Board,
EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 7th June, 1866.

• If this be not attended to, the Board cannot return detailed quantities to the unsuccessful parties.

NOTICE TO BUILDERS.

THE ECCLESIASTICAL COMMISSIONERS FOR IRELAND, on or before the 21st day of June, 1866, will receive Proposals for

REPAIRING THE CHURCHES OF

LAVY Cn. Cavan.
GLENLOUGH Cn. Leitrim.
MANORHAMILTON Co. Leitrim.

According to the Specifications, to be seen in the hands of the resident Ministers of the Parishes.

The lowest Proposal will not necessarily be accepted.

Each Proposal to be forwarded sealed, prepaid, and addressed thus:—

"Proposal for the Church of
"The Ecclesiastical Commissioners for Ireland, Dublin"

TO BUILDERS.

THE COMMITTEE appointed by the Grand

Jury of the County Tyrone are prepared to receive Tenders for certain works required in making Alterations and Additions to the COURT-HOUSE, at OMAGH, according to the Plans and Specification to be seen at the Office of the Secretary of the Grand Jury, at Omagh, or with the Architect, W. I. BARKER, Esq., Belfast.

The Proposals to be lodged with the Secretary of the Grand Jury not later than Four o'clock, on Saturday, 30th June next, and to be sealed and endorsed "Tender for Court-house Works."

BURLEIGH STUART, Secretary.
Court-house, Omagh, 1st June, 1866.

TO BUILDERS, CONTRACTORS, &c.

THE COMMISSIONERS OF PUBLIC

WORKS will receive Tenders up to Twelve o'clock noon, on the 18th JUNE, 1866, from parties willing to PURCHASE OLD BUILDING MATERIALS, consisting of Granite Flagging and Stone Work, Iron Railing, &c., lying near the Phoenix Column, in the Phoenix Park. The purchaser to have all removed at his own expense, and within one week from the date of purchase.

The Materials will be pointed out on application to Mr. McKENZIE, Overseer, at the Viceregal Lodge.

By Order of the Board,
EDWARD HORNSBY, Secretary.
Office of Public Works, Dublin, 8th June, 1866.

CHARLES SHEIL'S ALMS HOUSES CHARITY.

TO CONTRACTORS AND OTHERS.

PERSONS desirous of Tendering for the

Building of the proposed Alms Houses at Armagh may see the Plans and Specifications relating thereto at the Offices of Messrs. Lanyon, Lynn and Lanyon, No. 64, Upper Sackville-street, Dublin, any day between the hours of Ten and Five o'clock from the 15th till the 20th inst., and from the 21st till the 30th inst. at their Offices, No. 2, Queen-street, Belfast.

Tenders to be lodged, prepaid, on or before Monday, the 2nd July, 1866, with

PLATO OULTON, Secretary.
62, Up. Sackville-st., Dublin.

NOTICE TO BUILDERS.

ESTIMATES for the Erection of SCHOOLS,

DWELLINGS for TEACHERS, and OUT-OFFICES, proposed to be built on the property of the Right Hon. the Earl of Derby, at MONARD, Co. TIPPERARY (within a short distance of Limerick Junction), in conformity with Plans, &c., furnished by WILLIAM SIDNEY COX, Architect, will be received up to 22nd prox.

The Drawings and Specification (if not previously engaged) can be seen daily in the meantime by intending contractors, between the hours of Ten o'clock, a.m., and Three o'clock, p.m., at the Architect's Office, 40, Up. Cecil-street, Limerick, up to 1st prox., and afterwards at Ballykisteon, the residence of his lordship's agent, close to the intended site for the works.

Parties tendering must do so at their own expense. The lowest or any other Tender will not necessarily be adopted.

Each Tender to be enclosed, under sealed cover, postpaid, to JASPER BORTON, Esq., Ballykisteon, Tipperary, and to have "Tender for Schools" written on the back of cover.
21st May, 1866.

TO CONTRACTORS.

THE ATHBOY DRAINAGE BOARD

having been of opinion that the sums named in the Tender opened this day were excessive, especially having regard to the Estimate of the Inspector of the Board of Works, the time for receiving Tenders for the several works proposed, the Plans, &c., of which may be inspected at Mr. Morison's Office, 32, BACHELOR'S-WALK, DUBLIN, has been extended to the 25th instant at Eleven o'clock, a.m., when the Board will meet at the Court-house, Athboy. The Board will not be bound to accept the lowest or any tender.

N. HONE DYAS, Hon. Sec.

Athboy, 9th June, 1866.

QUEEN'S PARK, MONKSTOWN, CO. DUBLIN.

The Proprietor is now prepared to let on lease several judiciously planned Sites for Villas in the above beautifully situated Grounds, which have been planted and laid out—regardless of expense, and in the best taste—for the purpose.

QUEEN'S PARK

Occupies a well-chosen, elevated position on the south side of the road near Belgrave-square, convenient to Seapoint, Monks town, and Blackrock Railway Stations, and commanding a good aspect, and extensive Mountain and Wooded Scenery.

The roads and main sewers have been constructed in the best possible manner, and with all modern improvements.

Application to be made to—Mr. ALFRED G. JONES, 3, Molesworth-street, Architect, where a Lithographed Plan can be seen, and all necessary particulars and conditions ascertained; or to Mr. WILLIAM FRY, Solicitor, 13, Lower Mount-street, Dublin.

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Illustrated London News.

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"A large, well-filled, and useful book upon a subject which possesses a wide and increasing public interest. It is really the only English work we now have upon the subject."—*Engineering*.

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SLATING WORK of every description done on the most moderate terms. Old Roofs Repaired, &c. Ladders of all lengths and scaffolding for hire.

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 BATH STONE OFFICE, CORSHAM, WILTS.
 DUBLIN DEPOT, 70, SIR JOHN ROGERSON'S QUAY.

BATH STONE OF BEST QUALITY.
PICTOR & SONS, Quarry Owners and Stone Merchants, Bath.
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BEG to call attention to their extensive, varied, and well-selected Stock of Ironmongery in all its different branches. It consists of Parlour, Drawing-room, and Bed-room Grates; Kitchen Ranges, Sash Weights; Iron Rim, Mortise, and Stock Locks; Hinges of all descriptions; Wrought and Cut Nails, O. G. Gutters, Down Pipes and Fittings, Metal Skylights, Ventilating Bricks; Cast-iron Chimney-pieces, with and without Grates; Rabbit Traps, Fox Traps, Galvanized Wire Netting, Sheet and Perforated Zinc, Sink Traps, Furnace Doors and Frames, Hot Air and Plan Stoves, Cast-steel Digging and Manure Forks, Slashing Hooks, Rakes, Spades, Shovels and Hoes.

Manufacturing and General Ironmongers and Tool Warehouse—81, MIDDLE ABBEY-STREET.
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KITCHEN RANGES, with high pressure Boilers for Steaming or Bath purposes; Galvanized Iron Roofing, and Fencing Wire, best quality.

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 SIONS IN COURSE OF ERECTION.

HOGAN AND SONS, Stucco Plasterers,
 General Cement Workers, Modellers, &c., 168, GREAT BRUNSWICK-STREET, DUBLIN, beg leave to state that they are prepared to undertake Contracts in the above line. Ornaments for Cornices & Centre-Pieces for Ceilings supplied. FRONTS OF HOUSES done in Portland or Roman Cement. Materials supplied.

COUNTRY ORDERS strictly attended to, and first class workmen sent to all parts of the country.

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MESSRS. EARLEY AND POWELLS beg to announce that Messrs. John Hardman and Co., of No. 1, Upper Camden-street, have resigned the business of Artists, Sculptors, Church Painters, and Metal Workers, in their favour.

Earley and Powells have added to the above mentioned business the Painting and Staining of Windows for ecclesiastical and domestic buildings, under the management of Mr. Henry Powell, who conducted the Stained Glass Department of J. H. and Co., Birmingham for many years.

Mr. Thomas Earley is the only Church Decorator living who was taught his profession by the late A. Welby Pugin.

E. and P. being thoroughly practical men in each Department, are enabled to supply real artistic work at a moderate cost. They, therefore, respectfully solicit the patronage of the Clergy and Gentry of Ireland.

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MEMORIAL CROSS FOR SALE.—To be sold, at a moderate price, a well-finished Irish cross in Sicilian marble, with Galway blue marble polished base, and plinth of Ballinasloe limestone, standing 14 ft. high. One side bears a representation of the Crucifixion; the reverse, the Virgin treading on the Serpent. The above is the work of a young and promising artist, and is worth inspection. To be seen at Mr. Wade's, Upper Berkeley-street, Dublin.

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Also author of the Pamphlet on the iniquity of the present mode of levying the general taxation of these countries on the consumer, and collecting it from two items, which is the producer, and monopoly of trades and trade, and their bad effects on the industry, prosperity, peace, and contentment of the people, and the permanent stability of the empire at large.

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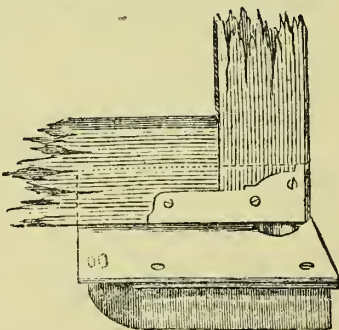
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 TO ARCHITECTS, CONTRACTORS FOR CHURCHES, CHAPELS, SCHOOLS, AND OTHERS,

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The Dublin Builder.

VOL. VIII.—No. 156.

THE LESSONS OF A CALAMITY.



DUBLIN citizens have known few sadder weeks than the one which has just passed over their heads. The City's annals are illustrated strangely by many a catastrophe singular in kind, and painful even yet to read in the meagre record; it has known the visitation of more than one calamity far wider in its terrible stroke than that of Thursday the 7th of June which hurried six poor souls into eternity, but few so harrowing in detail, so awfully present, and so much of the nature of a domestic bereavement, as to move the heart of a city as one man, as this one has done. Young lives full of hope suddenly extinguished are materials for a picture saddening enough, but the last scene of agony of the unfortunate victims, the terrible grief of the swaying helpless crowd, the poor mutilated and scorched remains, the blackened ghastly walls, the pathos of the little details of domestic life revealed, the long line of hearses wending their way through an awe-struck city, are accessories to a picture inconceivably painful.

One lesson, as yet untouched on, this dreadful occurrence has for those engaged in building. A terrible responsibility rests on those who build badly and recklessly at any time, it matters not whether the consequences of their reprehensible conduct are visited on their contemporaries or their posterity. It is no excuse to say that people must build cheap, and therefore, badly. They *must* do nothing of the kind, and no man has a right to run up such flimsy wretched carcasses of houses as this one in Westmoreland-street was, and make white the sepulchre, and leave it, in all possibility, to delude deceived and unsuspecting victims, at some time or another, into the jaws of a death of some or another kind. "Sir," said a practical eyewitness to us, watching the catastrophe with the eye of a chemist over a curious experiment in a laboratory, "the wretched ramshackle old place never waited to give the fire brigade or the poor women a chance; it collapsed and went to the bad long before it *ought* to have been burned;" and the truth of this remark is fully borne out by an inspection of the remains of the building after the fire. Joists and flooring timbers were extracted from the debris almost unscorched, in spite of the great conflagration. It would appear as if the ill-built fabric, cut up and weakened by frequent alterations in the ground floor, had yielded to the first burst of fire which may possibly have partaken partially of the character of an explosion, from escaped gas or otherwise. The whole of the floors prematurely fell into the pit beneath, carrying with them the unfortunate occupants, and the real work of the work of the fire was done there.

There appears to be great apathy among the public generally on the subject of the inflammability of houses. Lazy people are glad of an excuse for not changing their methods, and what is known as fire-proof construction is cried down as not being fire-proof. If it were at once honestly accepted that no building

whatever can be rendered absolutely fire-proof, people might profitably turn their attention to the question of rendering their houses as little inflammable as possible. In the ordinary dwelling-house some conductors of fire can scarcely be dispensed with—the wooden flooring, the lath and plaster ceiling, and the roof. The capacity for evil of these may, however, be much kept in hand. For ordinary purposes it does not appear likely that any system will ever supersede those in which concrete is the principal constituent. Concrete naturally suggests iron joists as the most natural aid to assist in carrying concrete over large spans, and the system known as Fox and Barrett's, or some similar one, is likely to remain in use. The fire-conducting qualities of wooden floors might be modified by introducing a row of tiles round the flooring next the walls. Slate strips instead of laths are now somewhat in use, but their efficiency for their purpose is doubtful. Parian cement, properly handled, might be used for such purposes as skirtings, architraves, jambs to doors and windows, and other purposes. Shutters might be dispensed with when not absolutely necessary, and revolving iron shutters used elsewhere. The percentage of extra cost added to a work by such changes from the ordinary mode as these, would be *far less* than people ordinarily suppose, as we could prove if necessary. Insurance rates would or ought to be lower, or might almost be dispensed with. An actual saving of money would result in the end, and, where houses were so constructed, one's mind might be at ease as to the possibility of witnessing such a fearfully rapid destruction of human life, as is the case of the unfortunate Delauns, their servant, and ill-starred guest.

THE DWELLINGS OF THE WORKING CLASSES AND CO-OPERATIVE BENEFIT BUILDING SOCIETIES.*

THE condition of the dwellings of the working classes in the large cities and towns of the United Kingdom, which now occupies a considerable amount of public interest, appears to have been either wholly disregarded, or to have attracted little attention until within a comparatively recent period.

This important subject obtained great prominence in 1842. In that year Mr. Chadwick, Secretary to the Poor Law Board, London, presented to Government an elaborate report on the sanitary condition of the labouring population of Great Britain, being the result of enquiries, extending over a period of four years, into the causes which had operated to produce a gradual increase of epidemic and contagious diseases amongst the poorer classes of the population. Mr. Chadwick, in this report, showed conclusively, that want of proper sewerage, added to a total neglect of drainage and habits of cleanliness, especially in towns, supplied a fruitful source of disease; but in particular he referred to the overcrowded state of the dwellings of the working classes, and to this circumstance he ascribed one of the principal causes of disease and of immorality. Numerous instances are given in the report of the depraved condition and physical wretchedness of the inmates of many of these overcrowded dwellings, and also of the injurious operation which tenements of an inferior construction have on the moral as well as on the sanitary condition, independently of any overcrowding.

These defects in the social system were not, it appears, limited to Great Britain. In 1845, Doctor Willis, who had devoted many years to acquiring correct information as to the condition of the working classes in Dublin, to which city we propose, as much as possible, to confine our observations, published a work on the subject, in which he describes the condition of the dwellings generally of these classes as most wretched, as occasioning an excessive rate of mortality, and as tending to degrade the occupants both socially and morally. It appears from the Census Commissioners' Report for 1841, which is referred to by Doctor Willis, that the enormous number of 23,127 families, or very nearly one half of the entire number of families then residing in the city, had the accommodation of only one room for each family, and that of these families 12,050 had this accommodation in houses of the first class, and that

10,151 had the same accommodation in houses of the second class. These houses, which we will again refer to, were classified in the report with reference to their size only, and not to their condition or to the locality in which they were situated. Without this explanation misapprehension might naturally arise with respect to the real character of the houses from the terms first and second class, which are applied to them.

Dr. Willis makes the following remarks on the state of these dwellings:—"Humanity shudders at the evils consequent on such wretchedness, and might be disposed to give slow credence to such appalling statements, were it not that they rest upon authority that cannot be questioned. Surely this state of things cannot longer be allowed to exist without the interference of those who have the power to alleviate some portion of this accumulated misery. These evils, though of long standing, are not the less urgent, and are of such magnitude that nothing short of legislative interference can remedy them." Some excellent remedies were suggested by Dr. Willis for the amelioration of the state of things which he has described; but he was not equally happy in the suggestion which he made, that the Government grant of £30,000 per annum to the public hospitals in the city should be withdrawn, on the ground that these institutions were of questionable utility, and that the grant, as also the private contributions in support of the hospitals, should be applied in improving the dwellings of the poor. Though we may consider such an arrangement as that proposed inexpedient or impracticable, we can entertain no reasonable doubt of the absolute necessity which existed for active measures of some description being promptly adopted to remove the defects which Dr. Willis pointed out on the authority of the Census Commissioners and as the result of his own observations.

The extremely unsatisfactory state of these countries, as regards sanitary matters, and the social and moral evils resulting from overcrowding, and the condition generally of the dwellings of the working classes, having been thus brought pressingly under the attention of the public and the Government, the question naturally arises as to whether any or what steps have been adopted in order to remedy these defects. For the attainment of the object several measures, either local or general in their application, have from time to time been sanctioned by Parliament; amongst these are the Public Health Act, the Nuisances Removal and Diseases Prevention Act, the Medical Charities Act, the Common Lodging Houses Act, the Dublin Improvement Acts Amendment Act, the Town Clauses Act, the Compulsory Vaccination Act, the Labouring Classes Dwellings' Act (1856) to facilitate the keeping of labourers' dwellings in tenable order, the Labouring Classes Dwellings' Act (1860). The latter empowers the Public Works Loan Commissioners to make advances to the owners of estates in Ireland for the erection thereon of labourers' cottages; restrictions as to the amount of the loans and security required, for the greater part unnecessary, are imposed by the act, which in many cases could not be complied with by parties desirous of advances. The act, on the whole, so far as it applies, is a judicious one, and affords great facilities to the proprietors of estates for improving the condition of their poorer tenants; but from a feeling of apathy or indifference on the subject the act has not been had recourse to, except to a very limited extent. Many of the other measures which we have referred to have been attended with signal benefit to the country at large, by effecting a considerable reduction in the annual percentage of deaths from fever and other diseases, from the high rate at which it formerly stood, as evidenced by the report of the Registrar General of Deaths for England, and as shown in a pamphlet written by Dr. Mapother, Medical Officer of Health for Dublin, on the Sanitary State of Irish Towns; but legislation, except in a mere sanitary point of view, does not appear to have resulted in any corresponding amendment in the structural or internal condition of the dwellings of the working classes, these dwellings being referred to by recent writers on the subject as generally in a most deplorable state.

In a work on the "Homes of the Working Classes," published within the present year, the following passage occurs:—

"One naturally thinks that the cheapest things in this beautiful world, the things that every one might have as much of as he liked, would be sunlight and pure air, yet they are fast becoming the scarcest luxuries a man can wish for. In the metropolis of the kingdom, and, indeed, in every large centre of population, thousands, nay, scores of thousands of human beings are congregated together, who, instead of enjoying those natural luxuries, dwell in unhealthy, dirty, miserable hovels, crowded into small streets and courts, oftentimes hidden, behind palatial structures, illustrating, by contrast, the wider extremes of modern civilization, where wealth accumulates and men decay."

* By Robert H. Jephson, Esq.

Private efforts of a remedial nature have, however, been in operation in England, which may be regarded as of great importance if viewed in the abstract, and of small extent if compared with the improvements which still remain to be effected. Benevolent associations have expended considerable sums of money in the erection of model lodging-houses and dwellings for workmen; and the extensive operation of co-operative building societies have conferred vast benefits on a large portion of the working community. As an example of the latter: within a period of sixteen years the sum of £1,900,598 was invested in one building society in Leeds, and the sum of £749,864 was advanced to borrowing members to build dwelling-houses. In Birmingham alone £2,500,000 has been invested in these Societies, principally by the working-classes; and upwards of 9,000 workmen have been enabled to acquire their own houses. In 1864 the Messrs. Chambers computed the amount invested in these societies in England, and lent out to workmen for the erection of dwellings at the enormous sum of £12,600,000. It is probable that if building societies had been more extensively in existence, and had had larger resources at command, they would have been found sufficient to mitigate, if not altogether remove, the evils which result from overcrowding in England, by lessening the pressure for accommodation, and would also have been in a position to meet the ordinary demand for additional dwellings; and it is, therefore, to be regretted that these societies have not been aided and strengthened by loans from the State.

An Act was passed on the 18th ultimo, for affording facilities for the provision of additional accommodation, entitled "The Labouring Classes Dwellings Act," which authorizes the Public Works Loan Commissioners to grant advances, at a low interest, to town corporations, certain public companies and individual employers, for the erection in England of houses for workmen. There exists so many difficulties in the way of private parties applying loans so obtained to a profitable account in a pecuniary sense that it is not likely that the Act will be extensively had recourse to. The persons who will probably borrow and build under its provisions are those who will be influenced by feelings of philanthropy and not with the object of gain. This Act does not provide for the want which has for a long period been felt in England, of power to inspect all dwellings let in tenements, which are those most open to the great objection of being overcrowded; nor does the Act contain compulsory clauses for the removal of house property which may be pronounced unfitted for human habitation. Powers of removal and re-construction are, with considerable advantage, exercised in France by the Imperial Government; and could, no doubt, be applied with equal effect by the English Government; but it is apprehended that in a free country like ours, the assertion of such powers would be regarded by the great mass of the people as an arbitrary and unwarrantable interference with their rights; and, it is probable that it was this impression which has led to the withdrawal of the Bill, containing compulsory clauses, which was recently submitted to the House of Commons, by Mr. McCullagh Torrens.

No appreciable improvement has been effected in the condition of the dwellings of the working classes in Ireland, and consequently much remains to be desired as regards the social and moral state of the occupants of these dwellings. Private benevolence has not been manifested in this direction, nor have benefit building societies been in existence. (Important powers, however, for the inspection and prevention of overcrowding of houses let in tenements, in addition to those applicable to common lodging houses, were given to the Corporation of Dublin in July last, which are calculated to ameliorate to some extent the condition of the occupiers; but these powers, unless vigorously enforced, are likely to become inoperative, from the determined and senseless opposition given by the landlords of these dwellings, and from the efforts too frequently made to evade the sanitary regulations insisted on by the tenants themselves, with whom habit has become a second nature, and who cannot readily adapt themselves to an improved condition.)

The most superficial observer who may traverse that portion of the City of Dublin, known as the Liberties, will find the condition of the dwellings there almost precisely in the same state they were in twenty-two years since, when Dr. Willis described them as unhealthy, dirty, and miserable. The medical officer of health for Dublin, writing in 1866, thus observes:—"The artisan and poorer classes of this city, who number about 100,000, dwell in some 8,000 houses, each room of which is usually let as a separate tenement; and the state of these dwellings is *deplorable in the extreme*." Again, he observes, "Many of these rooms are dangerously overcrowded—for instance, in one room six adults had but 216 cubic feet of space each, and two children half that amount." This deficiency of space will be apparent, when we remark that the allowance to the convicted felon is 1,000 cubic feet of air regularly changed. The over-crowded state of these

tenements, and the density of the population in the parish in which they are for the greater part situated, is shown by the Census Report for 1861, according to which there were in that parish (St. Michael's) on an average close on fifteen persons to each house; and, in the poorer districts, 3.59 to each room, and 2.71 to each bed; and numerous cases have been found, in which there were as many as twenty-five persons residing in the same house, or, on an average five to each room, and three to each bed.

Abundant evidence could be given to show that enormous moral and social evils underlie this state of overcrowding in the 8,000 houses which we have referred to.

The writer of an article in a recent number of *Chambers' Journal*, thus expresses himself on this subject:—"The virtues of chastity and purity are insisted upon from the pulpit on the Seventh Day, in vain, to hearers who are doomed night after night to lie three, nay, even six together in one bed, no matter what their sex or age may be, the eloquence of the most inspired apostle would be thrown away under such circumstances; and nobody is better aware of the fact than the hard-working and faithful minister of God."

The houses occupied by the labouring classes in this city, are those in which, at some remote period, persons in comparatively affluent circumstances resided,—those which had been originally used as stables and out-offices; and those which, as population increased, were imperfectly constructed—the whole being found crowded together in densely populated localities, forming unsightly masses of brick-work in narrow streets, lanes, and alleys. Nearly all these houses are let out in tenements, by middle men or intermediate landlords who, for the most part, have no permanent interest in the property, and, therefore, allow the houses to fall into a state of dilapidation, in which state, owing to the pressure for accommodation, they continue to be occupied.

One of the principal causes of the over-crowded and lamentable state of the dwellings under consideration, arises from the fact that the ordinary increase of population in the poorer districts is not sufficiently provided for by the erection of houses suitable for workmen and their families; and has, consequently, to be met by houses already tenanted, and, to a great extent, unfitted for human habitation. Another cause is that the poorer classes are invariably charged rents far in excess of the value of the wretched accommodation afforded, and are, therefore, necessarily obliged to restrict their house accommodation within the narrowest possible limits. It may, also, be observed, as a further cause of overcrowding, that workmen are not sufficiently independent to build houses for themselves; and that the capitalist finds it more his interest to erect houses of a better class than those which workmen stand most in need of.

It will not, therefore, be a matter of surprise, to learn that while the number of dwellings in the city and suburbs valued over £15 have increased 20 per cent. in number within the last ten years, those valued under that amount have not increased 1 per cent.

There exists, under all the circumstances which we have attempted to describe, an imperative necessity for prompt and judicious measures being adopted to improve the dwellings and homes of the labouring population in Dublin, and, indeed, in nearly all other parts of Ireland, and it now remains to be considered how this improvement can be accomplished.

A bill to encourage the erection of lodging-houses or dwellings for the labouring classes in Ireland, which has been prepared by Mr. Childers and the Attorney General (Mr. Lawson), has now obtained a third reading in the House of Commons. It provides that the Public Loan Commissioners should grant to municipal corporations, town commissioners, certain public companies, and individuals advances at 4 per cent. per annum interest (repayable by instalments within forty years), for the erection of dwellings for the labouring classes. It would appear that the repayment of the principal and interest will be by way of annuity, which, if the loan be taken for the full term allowed, the interest payable by the borrower will be brought up to 5½ per cent.

Assuming that the bill passes, the borrower, under its provisions, will become primarily liable for the repayment of the loan with interest, he will incur the risk of loss from defaulting tenants and from the houses remaining unoccupied, in addition to the cost of management; while it is not probable that after payment of all expenses, and the interest at 5½ per cent. per annum on the loan, he will derive any pecuniary benefit from the transaction. It is true that on the repayment of the loan the dwellings become the exclusive property of the borrower; but as the repayment may extend to 40 years, the dwellings at the end of that time will, it is presumed, be of small value. Private persons or companies will not, under these circumstances, it is apprehended, avail themselves of the Act for the purpose contemplated. It follows, therefore, that if the intentions of the framers of the measure, which is obviously to improve

the dwellings of the working classes, be carried out it must be by town corporations; and it is very questionable whether these public bodies, which are proverbially slow and apathetic in their movements, and subject to local influences, will exert themselves in the matter. There is another objection to this bill, which, as we have previously pointed out, also applies to the Act on this subject recently passed for England, namely—that it does not contain any enactment authorizing advances to building societies, or to those benevolent associations which have the same beneficial object in view.

There is a numerous portion of the population who do not enjoy permanent employment—whose means of support are barely adequate to meet their ordinary wants—whose expenditure for house accommodation must necessarily be small, and who, as regards their ability to assist themselves in the matter of house accommodation, may be considered as utterly helpless. It is the dwellings of this class which are in the most deplorable state, and their improvement to any important extent cannot be accomplished by any measure, which leaves the adoption of the remedy optional with private individuals, or public bodies. Nor can the improvement of the condition of this class to any appreciable extent be effected by benefit building or benevolent societies; much, no doubt, may be done by both, but unless attempts in this direction are found to be remunerative or self-supporting they will not be continued, and the attempts which have been made, by these societies and by capitalists, have not, with a few exceptions, succeeded in this very important object. It is only by the strong arm of the law, and the direct action of the Government, neither of which has as yet been efficiently exerted, that the condition of this class can be ameliorated. The following are a few of the remedial measures which appear to those acquainted with the subject to be absolutely necessary for England and Ireland:—

The establishment of a Central Government Department, which should exercise supervision (as in the case of Poor Law Commissioners and Boards of Guardians) over local authorities entrusted with the administration of sanitary regulations and the improvement of the dwellings of the labouring classes.

The appointment of local officers by the central authority.

The consolidation of the existing Sanitary Acts, with such amendments as are now known to be required.

Government Loans, at a low rate of interest, to be secured by mortgage on the property erected.

The fulfilment of proper structural conditions with regard to dwellings built, and to be built, and penal clauses applicable to landlords and tenants, to insure cleanliness, and dwellings being kept in repair.

The superior portions of the working classes, namely, those who have constant employment, and are in the receipt of wages, varying from 18s. to 30s. per week, ought to be capable of improving their own condition, and should be encouraged to do so, by facilities being presented to them of acquiring their own dwellings, and of profitably investing their savings or surplus income, with a view to the attainment of that object.

The Rev. William George Blacker, of Edinburgh, thus expresses himself on this subject in a lecture delivered by him on building societies:—"If the working classes of this country are ever, as a body, to receive better houses, they must build them themselves. They have immense resources, if they would only economise, combine, and apply them. The very struggle to rise in the world by the acquisition of property, in which the working men are thus called to engage, is a thoroughly wholesome one, whilst the contemplated result is the most truly conservative which it is possible to imagine. The notion that men gathered together in cities, must necessarily remain as degraded as we now find them ought not for a moment to be entertained."

The late Archbishop Whately pointed out that facilities for enabling workmen to acquire their own dwelling, are best afforded by any scheme which is founded on the principle of co-operation; and we find the practical working of the beneficial nature of this principle in the operations of co-operative building societies. These societies, moreover, have the additional advantage of engaging the interest, and exciting the best sympathies of the members, and of winning them over to provident and economical habits. We will briefly explain what a building society is. It consists of lenders and borrowers conjointly—the one using the society as a savings bank—paying in their money by small weekly or monthly instalments—the other using it as a means for obtaining the money to buy, or build houses, which they hold subject to a mortgage to the society, until they have paid it off by periodical instalments. Such a rate of interest is charged to the borrower, as will enable the society to pay to the investor a liberal percentage, and to defray cost of management.

It is only by means of a Building Society that per-

sons who are not possessed of capital, and who merely receive their incomes periodically, can ever become owners of a house; and this they are enabled to do, only from the practical fact, that the annual repayments required by the society upon a loan, do not much exceed the rent of a house which could be purchased with the sum borrowed, so that a man living ten or fourteen years in a house, instead of paying his rent to his landlord, and thus losing so much money for ever, consents to pay it with a small addition to a building society for a limited number of years, the society advances him the money requisite for the purchase of the property which, at the end of the stipulated time, when the loan has been repaid becomes entirely his own.

I will illustrate this by reference to the present position as to house accommodation of one of the working classes in Dublin; and to the manner in which that position could be improved by means of a Building Society. A workman pays for two ill-ventilated rooms in a dilapidated house in the worst part of the city, 3s. 6d. per week, or £9 2s. per annum. In twelve years he will have paid away, for the mere hire of these two rooms, the sum of £109 4s. He can build, in a good situation, a comfortable cottage which will contain three excellent rooms and out-offices for the sum of £75, which the society advances to him on mortgage of the building; and, on his paying to the society the sum of £9 13s. a year, instead of paying the landlord £9 2s. a year in rent, the house at the end of twelve years would become his own property. Estimating the ground rent and taxes at £1 10s. a year, he will thus have obtained his house for an outlay of only £24 12s. spread over a period of twelve years.

Mr. Akroyd, M.P. for Halifax, thus expresses himself on the subject of Building Societies:—"In no other way can the same benefits be conferred upon working men at so slight a loss—benefits which entail no degradation, and wound no self-respect; but, on the contrary, confer independence, whilst the achievement of that independence constitutes a habit of saving most useful in after life."

The moral effects are also great. The working man who has acquired a house of his own, will generally gain in self respect, and be stimulated to further exertions to improve his condition. The possession of property, however small, will make him more anxious for the preservation of the institutions of the state, and less exposed to the seductions of the political agitator. Those who have nothing to lose, and little to hope for, are generally reckless of consequences; and it was this class who engaged in the recent miserable and abortive effort to disturb the peace of the country. Though the feeling of loyalty which springs from interested motives, will not win our esteem, still it should not be undervalued; and when we consider the millions of money which even the most feeble attempt at insurrection might cost the country, respect for law and order will be cheaply purchased by the establishment or promotion of any means which would tend to make the people of this country more independent and happy.

The extensive formation of co-operative benefit Building Societies throughout the country, and their recognition and encouragement by assistance from the State, would, we believe, to no unimportant extent create a security against disturbance, and contentment amongst the labouring population.

THE NEW LAW COURTS, LONDON.

If British architects have their shortcomings, it is not for want of opportunity. Not only has the facility of travelling made them acquainted with the works which adorn all the great cities of Europe, but they have had the means of studying the requirements of their own country, in a vast variety of buildings. Churches, town halls, courts of law, clubs, banks, blocks of business chambers, gentlemen's houses in town and country, villas, ornamental cottages, have been multiplied to a degree surpassing any former times. France itself, though the improvements of its capital and chief cities have been more systematically conducted, can hardly rival the variety and profusion of British buildings. Certainly, no single work to be compared with the Houses of Parliament at Westminster has been produced by any other nation. And yet we seldom look forward with pleasure and confidence to the erection of any great public edifice. Public architecture in this country has had too many failures for ordinary people to be sanguine. When they read a discussion on art in the House of Commons or hear of elaborate plans and competitions of architects, it is with something like a settled melancholy, in which the reflection, "It is of no use, the thing is sure to be hideous," chiefly prevails. For, while private persons or societies, and in some cases provincial corporations, have been well served, the nation has been cursed by a strange fatality with a succession of buildings either mean, ill placed, or inconvenient. Either architects have been appalled at

the responsibility of building for the nation, and have lost their wonted skill, or else the dictation of commissions, or committees, or great personages has curbed their genius. In London we cannot name a really successful public building constructed in our time, and now that a national work of the highest importance is to be undertaken, in the form of a central palace of justice for the transaction of the law business of the whole country, there is a well-grounded apprehension that again there may be paltriness without and narrowness and inconvenience within.

If there be a failure this time, however, it will not be for want of honest endeavour. Nothing can be more sincere than the intentions of the Government, nothing fairer than their course of action. On Friday night there was a very legitimate discussion of the question whether there should be a competition between a limited number of architects who had given proof of ability, or a competition perfectly open to all the world. At first sight the latter appears to be the most reasonable. An open competition will, of course, give the genius of Europe the opportunity of showing itself, and it may be that some eminent foreign architect, or some Englishman unknown to fame, may produce a design excelling any that may be sent in by the twelve chosen competitors. On the other hand, there is much to be said for a restricted competition. The courts of law will not form a simple building. Something more will be required to show the fitness of a design than a mere *façade* and ground plan. In an edifice which is intended to contain a large number of courts, each of which must be convenient, airy, and easily accessible, and besides these a number of offices, judges' chambers, and other adjuncts to the administration of justice, there are many considerations besides attractiveness of design. The bar, the attorneys, the suitors must have a voice as well as the men of taste. The scheme of the Government is to invite twelve gentlemen to compete, to pay each of them £800, and to require from them minute details of their respective plans, amounting to some fifty drawings. In this way those intrusted with the decision would be able to understand clearly every portion of the design; nothing would be left to chance or to the after-fancy of the architect; and the man who could give simplicity to an elaborate system of halls, rooms, and passages would have his advantage as well as the copyist of mediæval or renaissance designs. A complaint has been made of the expense, and it has been declared that a smaller number of drawings would suffice to give the judge an adequate notion of the building.

We cannot agree with either objection. A sum of £9,600 is not too much to expend on twelve complete designs for an edifice which is to cost at least a million. We assume, however, that the nation will have the right to avail itself of anything that may appear meritorious in any of the designs, and does not bind itself to abide strictly by any one of them. It is quite possible that one designer may be able to supplement the deficiencies of another, and in that case the nation, with so many complete models before it, will have a good chance of obtaining a perfect building. It is desirable that the Government should not make any relaxation with regard to the completeness of the plans; but if it be strict on this point it must expect to pay eminent architects for their time and skill. There appears no reason, however, why other architects should not be allowed to send in their designs if they think fit. The two schemes might very well be united. The men at the head of the profession, who have given proofs of their ability, and who may be expected to produce the most satisfactory work, might be invited to compete, and paid accordingly; but, at the same time, the door need not be shut against others of less reputation and more leisure who may be inclined to compete for the great prize—the erection of the building.

Something more, however, is necessary for success than the summoning of architects, even if they were to be brought from the four quarters of the world. An architect can have only a very vague notion of what a system of courts of law should be. He may be able to group the recollections of his studies into imposing windows, or majestic flights of stairs, or quaintly devised ceilings, but the actual wants of the bench, the lawyers of both branches, the officers of the courts, and the whole body of suitors and witnesses must be explained by persons conversant with the procedure of courts of justice. In the building of the Houses of Parliament, it seems hardly to have occurred to any one that the edifice was meant for any other purpose than endlessly multiplied Gothic detail, or that it was to be used by human beings whose health would depend on space, light, and ventilation. The demon which whispered to the commissioners, "have a taste," made them forget that the worst mockery of success in building is highly-adorned discomfort. We hope the legal profession will take care to be better provided for. They know by long experience what a court ought not to be. The courts at Westminster-hall have an atmosphere at times almost pestilential, and every one who has business to transact there has

to squeeze his way in and out through crowds of loiterers. The sheds in which two of the vice-chancellors sit at Lincoln's-inn are still worse when there is a numerous audience, and the ill-health which affects so many persons connected with the profession may often be directly traced to the mephitic atmosphere they breathe so many hours in the day. Above all things, let us not find when the courts are built that the air is not fit for respiration an hour after the judge has taken his seat, that the gorgeously heraldic windows will not open, that the roof is too low, and the passages too narrow. The Act of Parliament gives power to take a great extent of ground, and there is no limit to the height to which the architect may carry his buildings. Courts should be both large and high; and if it be desirable that the judge, jury, and bar should be near each other, this may be easily contrived. The business part of the court may, as it were, be concentrated, and yet a sufficient space allowed beyond to give free entrance and exit, and sufficient ventilation. On this point the experience gained from recent edifices ought to be of service. Courts have been built, and it is said, with great success, at Liverpool, Manchester, and Leeds; and though we are now engaged on a more elaborate design, the principles which have insured this success may be again applied. In this matter the Lord Chancellor and the judges may be expected to take care of the profession. There is another part of the subject which has a great, though a less immediate importance. It was stated some time ago that eighteen courts were to be constructed, that being the number required by the public service. From this it would seem that no regard is to be paid to the inevitable growth of our judicial system. In the present generation three new equity courts have been established—those of the lords justices and of two new vice-chancellors; while the common law courts have always two, and sometimes three, tribunals sitting. It can hardly be doubted that in a few years it will be necessary to increase the number of the common law judges. There are six equity courts; the privy council is, we believe, to sit in the new building; there are also the Probate and Divorce Court, the Admiralty Court, and we know not what others. Might it not, then, be as well to anticipate the certain extension of our judicial system by constructing a large number of courts at once? It seems to us that if twenty-four instead of eighteen were built it would be only a reasonable provision for the future. It is better in the interests both of art and economy that a comprehensive design should be adopted at once than that the architect should be called upon again a few years hence to throw out wings, or to cover in yards, or to pull down partitions. This is a great work with adequate funds for a great and growing nation, and should not be spoilt by a sorry limitation of view.—*Times*.

PUBLIC ASSEMBLY ROOMS, BRAY.

THE want so long felt by residents in, and occasional visitors to, this fashionable watering-place of a suitable building in which concerts, exhibitions, lectures, &c., could be given, is soon to be removed. The handsome red and white brick building on Quinsborough-road, known as the Turkish Baths, is about being purchased, and, under a limited liability company, converted into public assembly rooms, &c. The capital is fixed at £5,000. An influential meeting was held on the 28th ult., Sir George Hodson, Bart., presiding. His opening remarks explain so fully the objects contemplated by the new company, that we lay some extracts therefrom before our readers:—"It was surprising when one recollected what had been done in Bray within the last twelve or fifteen years. After the introduction of the railway—that great forerunner and promoter of prosperity—public spirit and private enterprise had done more for Bray than had been done in any place he knew of. Bray had hotels not to be surpassed anywhere. It contained spacious places of worship, large terraces, and dwellings of every class suited to every portion of the community. But it occurred to him that, while that was so, the town was very deficient in one respect—it did not possess a building or institution where the requirements of civilized life can be carried out, so that it may become a fashionable place of resort, where assemblies, lectures, and concerts could be given. Without such a building he believed that, instead of making progress, Bray would be found to retrograde. Hence, it occurred to many that the building in which they were now met, might, with an average amount of expenditure, be made most suitable for the purposes contemplated. With that view it was examined by a skilful professional gentleman, who pronounced it specially adapted. The owner also had made most liberal offers for leasing and other arrangements, and the entire matter would be carried out by the provisional committee.

THE EVIDENCE OF ARCHITECTS CONCERNING THE OBSTRUCTION OF ANCIENT LIGHTS.*

AT the Royal Institute of British Architects, on the 30th ult., Professor Kerr addressed the members on this subject, and with especial reference to his published plan for determining the amount of window lights by measuring sky surface. He said, it must be admitted, at starting, that, perhaps, there was nothing which could more truly be called the enemy of the architect, the stern opponent of building improvement, especially in the metropolis. For example, one of those who were listening to him might be engaged in erecting, say in the City of London, some valuable building,—not merely valuable as a work of art—he would not ask the law to trouble itself with that question,—but, in the most simple utilitarian sense, valuable as an improvement of property; he had cleared an extensive and costly site, swept away a mass of inferior, unwholesome, and almost useless buildings, and his purpose now was to create in their stead something which should be worthy of the cost of this demolition, worthy of the advancing intelligence of the age, worthy of the enterprise of England, worthy of all the science that building could command. All unconscious offence, he proposed to utilize his ground to the utmost; to cover every available part, to elevate his building boldly to meet the demands of spaciousness, healthfulness, cheerfulness, stately aspect, and commercial benefit both to the individual proprietor, and to the community at large. Suddenly he would receive an intimation that there existed some little window, in some shabby neighbouring tenement, of which he had taken no account, but which, in the eye of the law, possessed a certain control of his proposed great building—a control, when it came to develop itself of singularly reckless, uncompromising, selfish strictness. In vain he might plead that he was only building on his own ground, that a considerable distance intervened between his operations and the exacting window, that actually a street intervened, or the property of a third party, or what not; the owner of the window had only to apply to the Court of Chancery, and the great building was absolutely prohibited from raising its head towards the free sky beyond a certain ancient height, or stretching itself on his own bed beyond a certain ancient limit. Drawn, as this picture obviously was, altogether from the architect's point of view, it might he safely affirmed that anything more oppressive than all this, anything more outrageous to the common sense of the uninitiated, it was scarcely possible to conceive.

Nevertheless, such was the law; and knowing, as he did, how strongly some high architectural authorities present might be expected to advocate its alteration; and cordially sympathising, as he himself did, with the feelings which actuated such advocacy; and being fully aware, as he was, that even Lord Chancellors did not hesitate to deplore the effect of the decisions they were pronouncing, and to suggest that the time had possibly come for the legislature to interfere (both Lord Westbury and Lord Cranworth),—yet, as one who had very attentively considered the bearings of the question on purely practical ground, he was sorry to say he had come to the definite conclusion that no material alteration in the law, in respect of principle, would be found possible. To illustrate this, he would suppose, for example, that that meeting, composed of an unusually large number of practical architects, had assembled for the purpose of devising a new law of lighting for a new London. He might suggest, as a not unlikely result, that they would, perhaps almost unanimously, agree to ordain that every proprietor should derive his light from his own ground and the public way, so that no one should have any possible claim of the kind upon his neighbour's ground. Very well; but how would even this help the matter? In a year or two estates, of necessity, began to be divided; the property which had been duly planned to be wholly lighted from its own ground, was sold in two or three lots; the mutual dependence of these portions upon each other, in respect of easements, could not possibly be ignored or superseded; and there, at one step, had they plunged into all the complications of the law of ancient lights as it stood. In fact, it was the legal policy, for want of a better, or its equivalent, for the foundation of the principle,—to consent to believe, in short, wherever the complications in question were found to exist, that they must have arisen, not by accident or inadvertency, but by consent and bargain, in some such way as this; and thus it was that the lawyers arrived, *a priori*, at the rule in force, viz., that the lighting which obtained access to a window over a neighbour's property was entitled to protection for ever, by the absolute prohibition of any erection on that property which should obstruct the lighting of the window.

* From the Builder.

Three conditions, however, were to be kept in view:—First, the lighting must have been enjoyed from time out of mind (of which, by the Act of William IV., twenty years was now to be accepted); secondly, the damage must be serious; not imaginary or theoretical, but practical, as a matter of inconvenience, or, in the language of the law, a material or substantial deprivation; and, thirdly, the lighting to be protected was not the total or gross amount actually possessed, but the net amount which had been made use of,—the *necessary* lighting in the particular case.

Now, accepting, as they must, with however bad a grace, the law as it stood, it became plain that although the lawyers must control its application, some one else must supply them with the *facts*. There were two ways in which this could be accomplished; first, by direct evidence; secondly, by indirect evidence, the opinions or calculations of scientific experts. That brought upon the field of debate the architect, or, as he was called in such matters, the surveyor.

Direct evidence, although theoretically the best of all, was practically a thing of the greatest uncertainty here; so much so that he would almost be inclined to pronounce it to be in no possible instance worthy of reliance. It generally took the form of affidavits made by the plaintiff and his servants, to the effect that they plainly perceived by their eyesight the injury in question. And, without imputing perjury to worthy persons of the kind, or any more grave error than the natural bias of humanity towards one's own side, when one gets into Chancery, he would mention one or two illustrations of direct evidence within his own experience. He had known the occupant of a house so strongly impressed with his sense of injury by reason of his neighbour's intentions to rebuild his house of greater height than formerly, that before the new wall had even reached the height of the old, he had caused the gas to be lighted at noon in his rooms and passages, and made oath that it was impossible any longer to transact business by the light of day. In fact, this was a common thing; he remembered one occasion on which he was obliged to advise on behalf of a landlord's suit that the tenant's evidence of this kind, in a separate suit, should be utterly disowned for the mere sake of the respectability of the case. Again, he had known a working shoemaker, complaining of an open gang-way which had been put across the back-yard next door, make oath, although it was demonstrable that the abstracted lighting was not more than three per cent. that he was no longer able to see to make his shoes, even close at the window and bright weather. Affidavits as to the lighting of gas half an hour or so earlier than formerly were common; and the solemnity with which eminent lawyers would expatiate upon such frivolous testimony was incredible. If it were possible to suggest anything more absurd than what he had quoted, he might state that that day he had been engaged in a case in which the plaintiff declared on oath that, having been accustomed to breed canaries in a certain dark corner of his room, no sooner had his neighbour some fifty feet off, raised a certain wall quite inconsiderably, than the canaries struck for light,—promptly refused any longer to replenish the earth. There was only one way in which, as he thought, experiment might be reasonably offered by way of direct evidence of injury to lighting. Let a temporary erection first be put up to correspond with the old state of things, and let a second erection, probably a screen of tarpaulins, be contrived to represent the new; let expert judges of lighting, choosing the precise hour of the day applicable to the case (if such were possible), and the precise atmospheric conditions, probably the early evening of a dull day, station themselves in the room supposed to be injured, and carefully watch; then let the tarpaulins be suddenly lowered and the effect observed. But even this course, however specious in theory would, in his opinion, seldom if ever be of any practical avail; for, when it was considered how multifarious were the accidental circumstances by which the ultimate judgment might be affected—from the passing change of a cloud to the winking of the observer's eye,—he might safely assert that even in this elaborate form, the direct testimony of the sense would be as unreliable as ever. There was, therefore, left to them but one alternative—to accept the indirect testimony of experts, the professional opinions of architects.

Speaking to an assembly of scientific men, he would next venture, without apology, to suggest that if scientific opinion were worth anything, it ought to be capable of test by proof. Looking at the general tenor of surveyors' evidence in light cases, as shown by scores of affidavits which could be referred to, it was but too plain that it very seldom, indeed, went farther than the simple dogmatic assertion of an empirical opinion. Mr. A. has been in practice thirty years; and, from his experience,

pronounces the alleged injury to the plaintiff's light to be very material. Mr. B. has been in practice forty years, and pronounces the injury to be absolutely nil. Mr. C., of fifty years' experience, cautiously affirms that a certain amount of damage must be admitted, but that it cannot, in his judgment, be designated as substantial damage. Mr. D., boasting of only twenty years' experience, makes up for the deficiency of age by decision of character, and declares his conviction to be that, instead of being injured, the plaintiff will be largely benefited. Surely it was not too much to say that such evidence as this was quite unworthy of the profession of architects. What, then, could be devised as a means of proof?

When such evidence as he had alluded to happened occasionally to enter into argument, there was one principle upon which everybody appeared to agree, namely, that the obstruction of sky-surface was an obstruction of light. Reducing this to a definite proposition, it must ultimately take this form,—that the light in question being *diffused light* (not direct sunlight—any more than moonlight—but the dull lighting of a clouded sky, not taken at noon when light was at its best, but at the decline of the day, when there would be just enough and none to spare), the sky might be considered as equivalent to a vast reflector, every point of which yielded its equal share of lighting to the window in question; in other words, that the window was placed in the centre and focus of a half hemisphere of sky-surface as the source of its lighting. He believed that all experiment and reasoning, whether of theoretical or practical men, would invariably confirm this view of the case as one which was to all intents and purposes sound and reliable. What, then, followed? Obviously this suggestion,—why not attempt to measure window light by measuring sky-surface?

The lecturer then proceeded to illustrate, by the help of diagrams, the minutiae of his published calculations; whereby he considered he had succeeded in mapping out in regular divisions the half hemisphere of sky pertaining to any window, and in attaching to each division its precise comparative lighting value. To this we have already alluded in noticing Mr. Kerr's book. The diagram which resulted thus represented the half hemisphere of reflecting sky-surface, or what might be called Mercator's projection, equally divided horizontally from the front to each side, and vertically from horizon to zenith; and it seemed plain enough that if any case of lighting were drawn in a sort of perspective upon this diagram, showing the old state of obstruction in contrast with the new, no more was needed to reduce the inquiry to a simple comparison of figures. If the former extent of exposed sky-surface, for instance, stood at the value of one hundred measures, and the proposed future extent at fifty, the diminution threatened was equal to exactly one-half of the old lighting, and this might be taken as proved.

Another form for the diagram would be based on the ordinary circular system of geographical maps, the horizon being represented as a semicircle and the zenith as its centre, with what might be called parallels of latitude and longitude in the usual way; the figures representing the value of the several sections remaining as in the former diagram.

The way in which to represent upon either of these diagrams the circumstances of a case in hand was simple enough. Taking a block plan of the premises and drawing a semicircle in front of the centre of the window in question, divided to correspond with the diagram, the position laterally of any required point became determined by drawing a line on the plan to that point from the centre of the window, and marking where it cut the semicircle. The position of anything vertically could be ascertained in a similar manner by means of a corresponding sectional drawing, on which, in every case, the distance of the object in question from the window being laid down and its height set up from a datum level, a line drawn through the resulting point to the centre of the window would give the vertical projection. The circumstance that horizontal straight lines came to be developed in an elliptical form would create no difficulty after a little practice; and, of course, in the circular projection it would be found that all vertical lines came to radiate towards the zenith,—which also would be easy enough to deal with.

But it was now to be observed that up to that point they had only arrived at the means of ascertaining the *comparative* abstraction of lighting power; and that would be of no service unless the relation of the size of the window to the size of the room, and of both to the amount of lighting power possessed, could be introduced into the calculation. In a word, it became necessary to look about for a standard of requisite lighting:—that which the law desired to protect was only the *necessary* lighting, and they must agree somehow upon a minimum of

necessity. Here there was more difficulty in appearance than in reality. For his own part he had taken the following means:—he looked about for a class of rooms which most persons might be expected to accept as being just sufficiently lighted and no more; and he considered he found such a class of rooms in the dining-rooms of the ordinary London streets, in Belgrave, Marylebone, and Bloomsbury. It would be a matter of opinion of course; but, he thought, these rooms might be taken as a fair standard,—leaning, if at all, towards the side of the defendant, as ought to be the case. Now, what were the conditions of lighting here? They were matter of mere measurement; and he made them out to take this form,—1 foot of width of window to 50 superficial feet of floor, with the opposite houses cutting off the sky at an angle of forty-five degrees all along the front. The window was, of course, supposed to be of the usual height, and the room of usual form; and any exceptional case would be subject to exceptional treatment. Thus a room 20 feet by 20 feet would have two windows 4 feet wide, with the houses over the way equal in height to the width of the street. Taking, therefore, the figured diagram of the sky, which they had before arrived at, and laying down thereon the horizontal line of forty-five degrees just referred to (it would be an elliptical line), the amount of exposed sky-surface left above it would prove to be 68 measures. Therefore, the rule would now take this shape,—1 ft. of window width to 50 feet of floor at 68 measures of sky-surface, would be the minimum of necessary lighting. When the proportion of window width to the floor was larger, the lighting required would be less; when the window was smaller, the lighting required would be more; and the calculation of this would be the application of the standard; but it must be manifest that, if this rule could be accepted, it supplied all that was wanted to enable the architect to turn his diagram to account: he had now ascertained, not merely the proportion of diminution, but the bearing of this upon the legal limit of necessity.

The lecturer then proceeded to make some interesting running remarks upon recent cases.

At a subsequent meeting of the Institute, the subject was resumed. Professor Donaldson opened the discussion with a paper in which various judicial opinions and decisions were brought together. He began thus:—

In presuming to suggest, at the meeting at which Mr. Kerr read his very important paper on the "Subject of Ancient Rights of Light and Air," that the discussion on the subject should be deferred to another evening, as it was then too late to enter upon its consideration so fully as it deserved, I had no idea of opening the discussion myself; but as our honorary secretaries requested me to do so, I felt myself compelled to yield to their wish. Not that I think myself at all competent adequately to grapple with so complex a subject, but as there are many recent decisions which have strictly and accurately laid down the law, hitherto supposed to be vague and apparently undefined, and as this interpretation of the rights of owners appears to me, as it does to Professor Kerr, to trench arbitrarily by its empirical dictum,—seeming to be at variance with natural rights, and to interfere with the improvement and necessary enlargement of property in cities,—I venture to submit to your consideration some very important observations on the matter. It is to be hoped that some legal mind will take up the subject, and produce a reliable work embodying accurately and fully the law as it is, and suggest some remedies for the wrongs it inflicts. It is not unbecoming for architects to endeavour to unravel these mysteries, as it is upon their statements of facts and opinions as to probable results, that action is taken, and as their own designs for buildings in towns must conform to the limited terms of the law. But I must observe, also, that the judges are apt not to place that reliance upon professional evidence to which we may consider it entitled, from the spirit of one-sided advocacy from which it too often proceeds, and the necessarily contradictory statements made; and I think that our friend Professor Kerr must invent some more simple diagrams and illustrations of his theory ere he will induce a judge or jury to make themselves acquainted with his ingenious but elaborate series of lines, the very sight of which is apt to bewilder the previously uninitiated.

The Light and Air question,—one of great importance, as involving serious consequences to owners and occupiers of property,—divides itself into two clear and distinct divisions;—the rights of the owner; the rights of the neighbour. It might be supposed that the natural right of the owner of the soil would be absolute,—*"ab ino usque ad cælum,"* but this enjoyment is limited by the legal restriction, necessarily artificial, as to the extent to which such right shall not diminish the enjoyment to which the neighbour is entitled. But there

are intrinsic and extrinsic rights which may apply to a plot. It would appear a natural conclusion, that whatever may be the extent of the enjoyments of an owner in respect of light and air, they should arise from or be provided on his own plot; but there are usually public rights attached thereto, which afford him certain easements, as, for instance, when the plot abuts on a public way, which thus affords him access, light, and air on that side. And there are also rights derived from the neighbouring land, which by law belong to him from prescriptive right; that is, not a mere natural right, but a right from previous enjoyment for a certain period of time. This period has been fixed by law (2 & 3 Wm. 4, c. 71) at twenty years, as follows:—

"Clause 3. And be it further enacted that, when the access and use of light to and for any dwelling-house, workshop, or other building, shall have been actually enjoyed therewith for the full period of twenty years without interruption, the right thereto shall be deemed absolute and indefeasible, any local usage or custom to the contrary notwithstanding, unless it shall appear that the same was enjoyed by some consent or agreement expressly made or given for that purpose by deed or writing."

As quoted by the Lord Chancellor (Yates v. Jack, 1866), there was supposed to exist previously a local custom in the city of London, by which the owner of a house in any street was permitted to raise it to whatever height he might think fit.

It seems strange that the law should so disregard the inherent rights of an owner that, if a neighbour should cover his plot with a building, and derive all his easements of air and light from his neighbours' land, the law does not protect the neighbours from such an assumption, nor even by law to compel the abatement, but forces them to protect their rights by the expensive process of erections in front thereof,—erections possibly useless and nuisances to themselves, and occupying space. Why should they not be able to protect their rights by proper notices, or by law be enabled, as, I believe, is the case in France, by a short process, to compel the abatement of the trespass?

And another case may arise of the limitation of enjoyment of one's property. On one side of a street there may be a house, say 20 feet high, and on the opposite plot no building. The owner of this plot may not erect any building which may obstruct the light of the low building, which may be only 20 ft. high, although, if he were able to carry up on his own ground a building 50 ft. or 60 ft. high, it would be immensely beneficial to him. But this right as to direct light applies even to an obstruction in a lateral direction, as the owner of an erection of twenty years' standing exercises as to light and air a lordship to the properties not only in front but to the right and left of him.

Vice-Chancellor Kindersley. Martin v. Headon. 4th May, 1866.

Reported in the *Times*, May 7. *Re Premises Conduit-place, London-street, Paddington.* The question, then, here, was the quantity of light obstructed; and it must be borne in mind that the actual amount of sky area lost was not only to be taken into account, but the space to which the plaintiff's right had already been reduced by the previous buildings. Looking at it in that point of view, although it was true that here the obstruction was oblique, an enormous amount of sky area was obstructed,—more than half. The evidence established a serious and material injury; and it appeared clearly that the plaintiff was obliged to cease from using his cutting-room in consequence, and that a previous occupant had left because the defendant's houses were built.

A defendant had not a right to say that, because a plaintiff could carry on his business elsewhere, he was not entitled to relief. He was entitled to be relieved against whatever interfered with his business of a tradesman, or his convenience and enjoyment if not. There must be a declaration that the plaintiff was entitled to damages, and the usual inquiry on the subject.

But let us suppose, that the neighbour or neighbours, from unwillingness to incur the wasteful expense of screen, or not at the moment aware of the extent to which the erection may have compromised his rights, should have allowed such trespass to the builder for twenty years, then the plenitude of right accrues to the builder, as if it were an injury to him,—who has already for twenty years by sufferance enjoyed all the advantages of the encroachment upon the adjoining rights,—not to have established his control over his neighbour's property. But the unrighteousness of the present state of the law becomes one-sided and more oppressive in regard to what may be called the inherent or primitive natural rights of property, when we consider the case of two plots opposite to each other, on either side of a street or public thoroughfare. The one has

an erection, say 50 ft. or 60 ft., his opposite neighbour one of 15 ft. or 20 ft. The latter may not raise his building, as it may obscure the light of the lower part of the building 50 ft. or 60 ft. high, because it was not convenient to him to carry up his 15 ft. or 20 ft. building to a greater height previously, and thus he is tied down to his dwarfish proportions in face of his gigantic opponent, and must so remain. Ought not the public way to confer, at all events, equal rights on the owners of buildings on both sides, and at least to allow of an erection to a like height on both sides? Or why should the dwarf on one side be able to stunt the growth of the aspiring erection on the other, and to keep it down to the like diminutive elevation of 15 ft. or 20 ft., and not leave both free? Does not this become a public wrong, as reducing the value of property, the improvement of which is a public benefit?

Let us also imagine another case. A man has his building, A, say 40 ft. or 50 ft. high on a plot of ground, which building immediately abuts on a vacant plot, B, say 20 ft. wide; but on the other side of the vacant plot is another plot, C, on which a man desires to erect a lofty building, say 40 ft. or 50 ft. high, which may intercept the light and air of the original building, why should he be restrained from exercising his morally just control over his own plot, when a stranger intervenes between the two?

Substantial damage must be done. The term "considerably obstructed" does not enable the judge to form an opinion. The mere having to alter the position of a table to work at in order to see better, is not sufficient evidence.

The stringency of the law applies in the case, where a man has one window just sufficient for his purpose: an opposite neighbour desires to build up in front at a reasonable distance. The room with the one window might have all the light already possessed, and even more, if another might be introduced or the window enlarged; but this is not allowed, if the owner object, although his opposite neighbour might be willing to be at the expense. We will now consider the French law on the subject, and it is extremely simple, as explained in the following work in the library of the Institute,—*Manuel des Lois du Bâtiment élaboré par la Société Centrale des Architectes.* 8vo. Paris 1863.

By the French law no owner can make an opening in his external wall, so as to overlook the property of an adjoining owner but under certain restrictions. It must have an iron grating, the bars of which must not be wider apart than 4 in., or be enclosed by ground glass, fixed in with plaster so as not to open; and the openings, which may be of any size, may not have the sill lower than 6 ft. above the floor. These precautions show that such windows are a concession to give light to a room or closet, but so that the adjoining owner's property may not be overlooked. The builder must give notice to the adjoining owner of such intended openings, and indemnify him for any damage caused by such openings; and the adjoining owner may close them upon buying the half of the wall.

These regulations attach to any wall within the distance of six feet from the land of an adjoining owner, and never acquire any prescriptive right. And the adjoining owner, if it be in the country, may, at any time, carry up another wall immediately adjoining the previous wall. One may not have a window overlooking the neighbours' grounds, or a balcony or other projection except there be a distance of six feet between front of the balcony or the protection, or between the wall in which the windows are and the land of the adjoining owner. Nor may there be an oblique view nearer than two feet from the end. But, supposing an owner has acquired the right of a direct view from a window in a wall, which separates two properties, still the adjoining opposite owner may erect a wall or building in front, provided it be at a distance of six feet from the face of the said wall, such distance of six feet being upon his own ground; and any return wall may be built, provided it be at the distance of two feet from the opening. No prescriptive title precludes the right of the adjoining owner. Thus, it appears, that the French law jealously protects the rights of the owner of the soil, and allows him to carry up an erection, however it may affect adjoining owners, provided it be done at a distance of six feet within its boundary.

The reader, then, referred to various recent decisions, some of which have been already stated in our columns, and are given more at length in the *Weekly Reporter*, and other legal journals.

The Cashel Town Commissioners have employed Mr. Rogers as their architect for the alterations and improvements in their Town Hall.

NOTES ON PAINTED DECORATION.

PART III.

ALTHOUGH we know very little of the Greek encaustic process, it is desirable that we should bear in mind that it was one which was capable of a variety of treatments. The earlier painters, as a rule, did not adopt the encaustic, but painted either in secco or fresco. In addition to the water and egg, they used also wax or resin as a vehicle when rendered fit for working with water. True encaustic consisted in painting with the latter vehicle, viz., wax, or, which amounts to the same thing, with wax colours, and burning in the work when finished by passing over it a tool called *καυτήριον*, or, in plain English, a branding iron. These wax colours were, in consistency, much like the moist colours of the present day, and were generally spread or applied with a kind of palette knife. The scale of colours was very limited. Polygnotus, as a rule, used only the four simple colours enumerated by Pliny as white, red, yellow, and black—black really meaning dark blue. It is important to keep this colour-temperance of the Greeks and the 12th and 13th century artists well before us. I say colour-temperance, because there can be no doubt that the early mediæval painters and the Athenian artists were familiar with many other colours besides those which they elected to use. Indeed the parallelism which exists between Greek art at its best and Gothic art at its best is more and more manifest the more one prosecutes archaeological inquiries. Between the every-day wall-painting of the Greeks and the ordinary mural decoration of the 12th and 13th centuries there was probably very little difference, with the single exception that the "classic" men knew more about the nude figure. As in the middle ages, so in the earlier classic times, the ground colours were often laid in fresco and the subject drawn in secco. For plain painted surfaces, for ship-painting, and for easel pictures, other methods were adopted by the Greek just as they were by the mediæval artist; but with these we have nothing to do at present, except to remember the fact, so as not to confound one with the other, and fall into those multitudinous errors which have arisen from simply forgetting that for various purposes there were various processes. Passing by the oil vehicle, which is familiar to every one, we come to the spirit vehicle introduced by Mr. Gambier Parry. The strong testimony which this gentleman gives in favour of this process, and the important works which have been executed in it by Mr. Gambier Parry himself and by Mr. Leighton, render it necessary to examine it somewhat in detail. And first, I cannot perhaps do better than give two quotations from letters which Mr. Gambier Parry has written me on the subject, to show the strong opinion which he holds of the superiority of this process over all others. "If people," he says, "would but once try it, I doubt their painting in anything else on walls. It is for that purpose alone I devised it after scores of experiments." Again, "My system has advantages which no other system combines; it has no chemicals to affect the most delicate colours; it is dependent on the most durable of all known materials for its protection, and perfectly easy and satisfactory in execution." The various letters and lectures with which Mr. Gambier Parry has favoured the public on this very important subject may be briefly summed up as follows:—

1. England is different from all other countries, inasmuch as the damp appears to be the prevailing element in walls and atmosphere.

2. Fresco is not suited to English light. All the bright lights and sharp effects of modern fresco prove this, for they are done in tempera.

3. Paintings on the walls of the old churches in this country were done in several ways. In many cases a fatty vehicle was used, so that the colours stands out in relief. Some of the most ancient works appear to be done in fresco secco; some probably with wax in the composition of the tempera. The failure of the old paintings is owing to the destruction by damp of the tenacity of the size or egg media.

4. The spirit process has—

- The luminousness of fresco;
- The facility of tempera (or secco);
- The richness of oil; and
- The durability of encaustic.

5. The composition has strength to resist external damp, is free from chemical action, so that the most delicate colours may be used; does not change by age, penetrates the pores of the plaster, and dries hard.

6. The composition for the colours or medium is made of—

Pure bleached wax	...	3 oz.	} by weight.
Elemi resin	...	1 oz.	
Oil of spike lavender	...	6 oz.	
Finest preparation of artists' copal	...	18 oz.	} liquid measure.

This is used throughout. All colours are ground up in it, and may be kept in tubes like oil colours. Then, also, by diluting the above-named composition in twice its bulk of rectified spirits of turpentine, a

liquid is obtained for saturating the walls with copious washes, or for what Theophilus would have called the aspergatur process.

7. These "washes" are important; the last should be mixed up with—

Best gilders' whiting, well washed	3 parts in bulk,	} not weight.
and baked dry	...	
Flake white ground (as usual) in	1 part ditto.	} 1 part ditto.
water, and perfectly dry	...	

And this mixture should attain the consistency of thin cream. Two coats are, as a rule, better than one. Common rough plaster will take two doses of each; and each should have twenty-four hours to evaporate.

8. The day's work must be prepared by washing thinly with oil of spike lightly applied to the plaster before the palette is prepared.

9. The vehicle for painting is the same as the wall wash, twice diluted, or oil of spike, or highly rectified turpentine.

10. Nothing should be touched with a volatile oil but what is to be painted into. Cobalt and ultra marine require a fuller vehicle. Plain volatile oil should therefore not be used with these, but one composed of the medium diluted with three or four times its bulk of spike oil or turpentine.

11. Emerald, oxide of chromium, lake, brown madder, rose madder, Indian red, Venetian red, &c., should be mixed with the first medium, and applied with a brush dipped in pure volatile oil. Ivory black should be mixed with a fourth part of burnt umber.

12. Use plenty of colour in a flat brush, and work quickly and with decision, as in fresco.

Two very important details still remain to be described—I mean the preparation of the medium and the plaster.

To prepare the medium put first the Elemi resin into a copper saucepan, tinned inside, 6 inches in diameter and 7 inches high; melt the resin gently over a charcoal fire or spirit lamp in order to evaporate the greater part of its essential oil; then throw in the wax, and after that is melted let the two simmer for ten minutes. Strain then into fine muslin through a copper saucepan tinned inside 6 in. in diameter and 24 in. high; add the oil of spike and the copal, and let them boil stirring them a good deal, till a white froth comes on the surface; then pour off into jars for use; make it out of doors or on a stone floor to guard against accidents; but when cold and mixed with colour it is innocuous. A large graduated glass for measuring liquids is required, and the wax should be obtained from wax merchants and places where it is prepared for photographs. For mere decorative work rectified turpentine may be used for spike oil, anise for copal, and the Elemi might be omitted altogether. In order to clean the ground of the picture use essence of spike lavender, and clean the brushes often in turpentine. Of the plaster, Mr. Gambier Parry writes thus:—"The best plaster to paint upon is the most absorbent. The ruling idea of durability, where it has enemies, must be that of incorporation. A stone wall is not so good as one plastered, the absorbence and the chemical action of the stones and their mortar and cement are not alike. The best wall is a brick one plastered with good common lime and sand plaster. It sucks in the dissolved resins deeply. The objection to cements is that they have almost always efflorescing qualities. The white floated plaster of common ceilings and partitions is the next best thing to common rough absorbent plaster, but of course not so good because not so porous."

Now, it will be observed that the process I have just described differs in no material respect from the simple secco process of old times except in substituting for the simple egg or albumen tempera one of a complex nature compounded of four or five different materials. The sole advantage gained by this over the older method is said to be in its durability. Of this, however, it is manifest that no one in the present generation can be considered a practical judge. It may be quite true that the only enemy to wall painting in England is external damp, and that, as Mr. Gambier Parry states, the failure of our old mural pictures is owing to the destruction of the tenacity of the egg tempera by this great art enemy. If this be true, then the substitution of any other tempera which would successfully defy the power under which our old paintings are said to have succumbed, and which at the same time would give us all the advantages of the older process, must indeed be a very great boon to art and to the world. But is it true that the old system (imperfect of course, as every system we can devise must be) has been proved to be so thoroughly a failure as to be unworthy our confidence? I think not. Mr. Gambier Parry confesses that internal damp, or, in other words, a damp wall, is fatal to any method, including his own spirit process. Can he be sure that the old failures were not in any way the result of this universally fatal disease?

The water-glass process about which every one was talking a year or two ago is nothing more than a kind of secco-painting protected by silicate of potash.

NEW WAREHOUSE, BRIDGE STREET, BELFAST.

THIS building, an illustration of which appears in the present number, is one of those large establishments, the erection of which is transforming the aspect of Belfast. It has been erected by Sir John Arnott & Co., and is not less extensive than the monster establishments of the same firm in the other principal towns in Ireland. This building presents externally a central pavilion with lateral wings, and has a frontage of 120 feet by 140 feet in depth from front to rear. The piers and clustered columns are of chiselled granite, and red Aberdeen granite is freely used. The capitals of the columns are in sandstone and carved. The lighting throughout is ample in quantity, from windows in front and rear, and from the roof transmitted through spacious "wells," through the different floors.

The site on which the building stands is probably considered as a central business position, one of the most desirable in Belfast. Bridge-street, a short thoroughfare between High-street, Donegall-street, and North-street, is at present the principal channel of communication between what may be considered two sections of the town. A river formerly flowed down the centre of High-street, and was crossed near this by a bridge which gave the name to the street. The importance of the thoroughfare, and its inconvenient narrowness have, at length, been recognised, and boldly met; and the Western side of the street has been almost wholly removed by handsome buildings erected on a line ten feet farther back. In consequence of this, a fair view will be had of the façade seen in our illustration. Messrs. Thomas Jackson & Sons, Belfast, are the architects. Mr. John Murphy, builder. There are no particulars of the cost before us.

THE LATE DR. W. H. HARVEY.

DR. HARVEY was born, near Limerick, on the 5th of February, 1811. His parents belonged to the Society of Friends; though, in after life, he joined the communion of the Established Church. At a very early period he exhibited a great fondness for collecting objects of natural history. His father was in the habit of going for a portion of each summer to the seaside at Kilkee; and, in making a collection of the sea weeds cast up on this productive coast, the first taste for this speciality in botany was indulged in. In the course of 1824 Harvey was sent to Ballitore School, Kildare, where he received a most liberal and excellent education. After continuing here for some years he went home to Limerick, and settled down for a time in his father's office. The accurate business habits here acquired remained with Harvey to the last, and were found to be of the most essential value to him throughout his life. About this time he made several excursions into the neighbouring counties of Cork and Kerry, and commenced a herbarium of native plants which still exists. During one of these journeys, in April, 1832, he discovered a new species of *Linnaeus* (*L. involutus*, Harv.) in a small alpine lake in Killarney. His elder brother was appointed, in 1835, Treasurer and Registrar-General to the Cape of Good Hope colony; and Harvey, thinking it would be a grand opportunity of seeing a new country and collecting unknown plants, obtained leave to accompany his brother. On his arrival at the Cape he commenced to examine and describe the plants; and many papers descriptive of new genera and species are to be met with in the *London Journal of Botany* for 1837-8. In this latter year he published, in one small 8vo volume, "Contributions towards a Flora Capensis." In 1839 he returned to Europe with his brother, who was at this time in delicate health, and who died before the vessel reached England. The Government offered Harvey his brother's place, which was, after some deliberation, accepted, and in 1840 he once again returned to Cape Town. His reputation as a botanist was at this time well established, and his desire to devote himself altogether to his favourite pursuit was perhaps never more fervent than when he thus found himself in the enjoyment of a fair competency and of a pleasant position: so that when, in the course of 1843, he heard of the death of Dr. Coulter, Keeper of the Herbarium of the University of Dublin, he made up his mind to apply for the vacant post. At this time W. Allman was Professor of Botany, and Whitley Stokes was Lecturer on Natural History in Dublin; but in the course of 1843 the Professor of Botany died, and for a time it was thought probable that the Keepership of the Herbarium would be united to the Professorship. Dr. Allman, the present Professor of Natural History in Edinburgh, was, however, elected as Professor instead of Dr. Harvey:

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but the Keepership of the Herbarium was given to him. Small though the salary was—not so much as Harvey was in the habit of giving to his servants at the Cape—the place was one that he had often wished for, and he lost no time in putting Coulter's American collection and his own Cape specimens into order; and in consideration of his presenting his own Herbarium to the College he was allowed a yearly sum of £50 for life. His election to the Keepership was in 1844, and in February of that year the Dublin University conferred on him the honorary degree of M.D. From this time Harvey's life was one of constant, unceasing work. In 1845 he projected the first of his great works, the "Phycologia Britannica," the first part of which was published in January, 1846. The whole of the plates in this work, 360 in number, were drawn on stone by Dr. Harvey himself. In every respect, pecuniarily and otherwise, the publication of the "British Seaweeds," was a great success, and established its author as one of the first living authorities on this subject. In 1849 he published, at the instance of Mr. Van Voorst, "The Seaside Book," dedicated to his brother-in-law, and one of the pleasantest of a now very numerous class of books. It has already reached a third edition.

In January, 1848, Dr. Harvey was elected Professor of Botany to the Royal Dublin Society. The following year Dr. Harvey received an invitation to deliver a course of lectures on Algæ before the Lowell Institute of Boston, U.S., and he left Dublin for America in July, 1849, returning early in May, 1850. In the meanwhile he had not been idle; but visiting many places on the coast of North America, he made large collections of algæ. He also at this time made a tour around the shores of the Pacific, visiting Oregon and California. The result of these labours was published by the Smithsonian Institution, in a large 4to volume of 550 pages and 50 plates, during the years 1852–57. The preparation of this work and the publication of a "Nereis Australis" engaged Dr. Harvey for another year or two; but again the great desire to be away in other parts of the world came over him, and this time he made arrangements for a long, and, as it proved, a last journey. In August, 1853, he left for Ceylon, stopping at Aden to collect on the way. From Ceylon he proceeded to Australia, visiting Sydney, Melbourne, Adelaide, and several parts of Tasmania and New Zealand. Taking advantage of the visit of a missionary ship, he went to the Fiji and Friendly group of islands. Returning to Sydney, he went to Valparaiso, and came home in October, 1856. This extended tour cost Dr. Harvey more than £1,200. The University and the Royal Dublin Society allowed him his full salary during his absence, and his friend Prof. Allman delivered the necessary course of lectures for him. The algæ collected on the Australian coast amounted to more than 20,000 specimens and 600 species; and in 1857 the "Phycologia Australica" was projected. This was published in five volumes, each volume containing sixty plates, of which the first 200 were drawn on stone by the author. The work was completed in 1863. The "Flora Capensis" was next commenced. In this Dr. Harvey was joined by Dr. Sonder, of Hamburg; and the Cape Government, at the solicitation of the late Sir W. Hooker, gave a grant in aid of the publication of this volume. This great work, of which three large 8vo volumes are already published, unfortunately is still incomplete. Dr. Harvey commenced at the same time a series of illustrations to this Flora, under the title of "Thesaurus Capensis;" two volumes of this work, containing 200 plates, are already published. In 1856 Professor Allman was appointed to the Chair of Natural History in Edinburgh; and at the subsequent election Dr. Harvey was chosen as his successor in the University of Dublin. About the same time the professional staff was transferred from the Royal Dublin Society to the Museum of Irish Industry, and Prof. Harvey was retained as one of the Government staff.

Such constant work, and so very much of it desk-work, was ill suited to Prof. Harvey's constitution; and in the course of 1861 he was so ill that at one time his life was considered in danger. From this attack he almost completely recovered; but from this time he did not work so hard as before. His last course of lectures was delivered in the spring of 1864, and by the advice of his physicians Prof. Harvey spent the winter and spring of 1864–5 in the south of France. Pleasant letters from Arcachon told that a more genial climate had revived the invalid, and the returning strength brought on a wish to be back once again in the Herbarium. Home they brought him, and to see the still zealous worker drooping and accumulated collections of African plants, eager to describe them, still too feeble to hold them, was a sight to see and grieve at. Working away, the autumn and the winter months passed, and the spring days were looked forward to with hope. As the days got longer a change of air and scene was recommended and Torquay was chosen. Thither, about last Easter, guided by gentle and loving hands, Dr. Harvey went; and there breathed his last.—*Athenæum*.

INSTITUTE OF CIVIL ENGINEERS, LONDON.

At the president's late soiree a large and distinguished company honoured Mr. Fowler with their presence. The attractions and novelties displayed at these annual festivities at the society's institution in Great George-street are always of high interest, including, as they generally do, models and drawings of some of the most important practical works of the day in course of progress or in contemplation, as well as numerous mechanical and engineering inventions. Pictures, too, of the highest order of art are generally lent by fellows and other gentlemen for the decoration of the rooms. In none of these departments was the present annual reception less noteworthy than of old. The many excellent paintings and water-colours by Creswick, Frith, Goodhall, Wilkie, Horsley, Linnell, Turner, W. Hunt, Birket Foster, Corbould, Elmore, Thomas, and other equally eminent artists, lent from the collections of Earl Grosvenor, the Messrs. W. and C. Lucas, Mr. McLean, and other connoisseurs, formed a veritable art gallery which one may well regret had such a truly ephemeral endurance. Amongst the sculpture was the charming statuette "Autumn," by Westmacott, and an admirable bust of the Queen, by Mr. T. Earle. Models of noble and curious ships, of engines, muskets, guns, were, as usual, in profusion. Amongst the first was one of the handsome steam yacht *Mahrouse*, built by Mr. Samuda for the Viceroy of Egypt; and amongst the models of engines were those of Her Majesty's ships the *Octavia*, by Maudslay, and the *Northumberland*, by Penn. The original engine used by Watt himself was amongst the curiosities. Mr. C. W. Siemens exhibited a steam governor of large size, constructed on the same gyrometric principle as the small model recently described by him before the Royal Society. Mr. Giffard sent drawings of an improved digester; Mr. Hooper, specimens of his submarine telegraph cables; Mr. Walker a machine bottle-cleaner; Mr. Carrett, of Leeds, an hydraulic coal-cutting machine; Messrs. Greenwood and Battley, a "waxed thread" sewing machine; Mr. Taylor, his telescopic rain water pipes, the arrangement of which affords the greatest facilities for cleansing and examination; Mr. Thompson, his joining and wood shaping machine; the Messrs. Daglish, an anti-friction slide valve; Messrs. Elliott, a new theodolite, so constructed that the telescope will revolve in any vertical plane, enabling a series of sections to be taken without moving the instrument; the Messrs. Elkington, some very elaborate and handsome examples of their electrolytically articles; Captain Baker, two very deeply considered models of life boats, more especially adapted for the saving of ship passengers, but also suitable for shore service; and Mr. Kirkaldy, a whole case of bent, crushed, twisted, punched, and buckled bars and blocks of iron and steel, which had been distorted or broken in various ways by his magnificent testing machine in Southwark-street.

The most curious invention was certainly the adytic-retainer lock, manufactured by Messrs. Whitfield, of Birmingham. The lock can only be properly explained in detail with the aid of drawings; but we may briefly outline its remarkable principles. The key may be said to consist of a pipe and stump, from which the plate of wards has been separated, called a blank key and check by the maker. The two together represent an ordinary key, and if such a key worked upon, say six plates or levers fitting to the wards, it is evident it would unlock an ordinary lock in the ordinary way. But the inventor has desired to make an extraordinary lock, which shall not be opened in an ordinary or even any extraordinary way, but only in one way. The blank key goes into a keyhole; its wards, or the check, go into a slot or opening in the same cylinder; the whole thus becomes, as it were, the true key to lift the levers or plates by which the lock is to be opened; but, in these plates or levers, is another slot of a T-shape, and in this slot works a stump which is essential to the unlocking. Now, so carefully adjusted is this stump to the orifice it has to enter, that a hair's-breadth difference between the length of any of the wards of a forged key, and those of the proper key would cause the forged key to be utterly ineffectual; and, as the check drops through the lock and is only regained by its owner when the door of the safe is opened, the tamperer can never know whether he is near or wide of the mark in his attempts, whilst the proprietor whose lock has been tried, finds all the counterfeit checks that have been used when he opens the lock by its proper key. This is certainly the most ingenious and efficacious lock we have ever seen. A very convenient application of electricity to the bell-service of ordinary domestic houses and hotels was shown by Mr. Sax. The battery used is one of a very permanent and simple character, sulphate of mercury being the material employed for the generation of the electric force. All the wires in the house are connected to one bell, and by means of local circuits, a disc is made to appear in a plate of orifices placed in the servants' hall, corresponding to the room in which the attendance is required, this disc remaining visible until it is

made to return to its normal position by the attendant.

Several folios of Sketches in Nicaragua, and of the Nicaraguenses, by Captain Pin, were a source of much attraction.

Among the company were the Earl of Grosvenor, General Lefroy, Lord Claud Hamilton, Lord Houghton, and other noblemen, Mr. Samuda, Mr. Siemens, Mr. Bramwell, Mr. Lancaster, Mr. Vignolles, and a large concourse of other eminent engineers and fellows of the institute.

THE HEALTH OF DUBLIN.

(From the Registrar General's Weekly Return.)

In the Dublin Registration District (which extends over an area of 9,745 statute acres, and had, by the Census of 1861, a population of 314,409), the births registered during the week ending June 9th, amounted to 202—103 boys and 99 girls. The number in the corresponding week of last year was 152. The deaths registered during the week were 151—75 males and 76 females. In the corresponding week of last year the number was 155. Eight deaths resulted from fever. Two deaths were ascribed to scarlatina. Two deaths from whooping cough were registered. Diarrhœa caused 5 deaths. Thirteen children died from convulsions. Fifteen deaths were attributed to bronchitis. Pneumonia, or inflammation of the lungs, caused 2 deaths. Eighteen deaths resulted from phthisis or pulmonary consumption. Apoplexy proved fatal in 5 instances and paralysis in 3. Eight deaths were the result of heart disease, and 3 of aneurism. Ten deaths were referred to old age. A boy, aged 11 years, died in Jervis-street Hospital from "the effects of alcoholic poisoning." A boy, aged 12 years, died in the Meath Hospital from tetanus, or locked-jaw. A girl, aged 10 years, was drowned in the "Pimlico" river. A servant maid, aged 30, died from the effects of a "severe scald." The deaths registered in No. 1, North City District (Summer-hill), afford an annual ratio of 14 in every 1,000 of the population—the Mater Misericordiæ Hospital is situated in this District; in No. 2, North City District (Coleraine-street), which includes the Rotundo Lying-in Hospital and Jervis-street Hospital, the deaths registered amounted to 27 per 1,000; and in No. 3, North City (Blackhall-street), to 49 per 1,000;—the North Dublin Union Workhouse, the Hardwicke, Richmond, and Whitworth Hospitals, and the Richmond District Lunatic Asylum, are situated in this District. In No. 1, South City District (Meath-street), which includes the South Dublin Union Workhouse, the Cork-street Fever Hospital, and Steevens' Hospital, the deaths registered afford an annual ratio of 52 per 1,000; in No. 2, South City District (High-street), the ratio was 20 per 1,000; in No. 3, South City District (Peter-street), which includes the Coombe Lying-in Hospital, and the Meath, the Adelaide, and Mercer's Hospitals, it was 21 per 1,000; and in No. 4, South City District (Graud Canal-street), in which Sir Patrick Dun's and St. Vincent's Hospitals are situated, it was 13 per 1,000. In the suburban district of Rathmines the annual ratio was 20 per 1,000; in Donnybrook it was 25—the City of Dublin Hospital and the Hospital for Incurables are situated in this district; in Blackrock it was 44, and in Kingstown 6 per 1,000 of the population by the census in 1861. Fifty-six of the deaths registered during the week occurred in hospitals and other public institutions; of this number 10 took place in the North Dublin and 23 in the South Dublin Union Workhouse.

At the Observatory of the Ordnance Survey Office, Phoenix Park, the mean height of the barometer during the week was 29.929 inches. The highest daily mean reading (30.209) occurred on Friday, and the lowest (29.811) on Tuesday. The mean temperature during the week was 56.2° (in the corresponding week of 1865 it was 63.7°); the lowest daily mean (53.7°) occurred on Wednesday, and the highest (58.3°) on Saturday. The temperature was highest on Saturday, when the thermometer registered 70.1°, and was lowest on Sunday and Tuesday, the mercury having fallen to 46.0°. The mean of the dry bulb for the week was 55.9°; and of the wet bulb 54.5°. The mean humidity of the air was .849—complete saturation being represented by 1.0. The rainfall during the week measured .957 of an inch.

ROYAL IRISH ACADEMY.

A GENERAL meeting of the Academy was held on Monday evening. Dr. Hayden read a paper "On the physiology of protrusion of the tongue, and its deviation to the affected side in unilateral paralysis."

By permission of the Academy, Mr. E. A. Conwell read two papers—No. 1 "On the inscribed Cromlech near Rathkenny, county Meath;" No. 2, "Is the Lia Fail on Tara Hill inscribed?"

The following gentlemen were elected members:—John A. Baker, Esq., F.R.C.S.I.; Edward H. Bennett, M.D.; Francis R. Cruise, M.D.; Thomas Gallwey, Esq., J.P.; Thomas Maxwell Hutton, Esq.; Rev. John O'Rourke; Alexander Thom, Esq.

NEW LAMPS FOR OLD ONES.*

THERE are two sides to most questions; and, if I have rightly estimated the audience I am to address this evening, they are likely to regard the question which I have undertaken to put to them from quite opposite points of view. For the lectures instituted by the Architectural Exhibition Committee are intended, I believe, to interest the public, if possible, in the art for which they cater, and yet, in fact at least, an equal proportion of the professional element is mixed with the lay among those who assemble to listen to them. Now, though thus composed of proportional half-and-half, I trust that neither party are inclined to half-and-half measures. For my part I like good honest prejudices. A fair stand-up fight for principles in art quickens the life-blood and breaks no bones. The happy family condition of cat and mouse amiability, of lion and lamb lying down together, may be all very well for the millennium, but, under existing terrestrial circumstances, it is rather a tame state of affairs. So I shall begin by endeavouring to set you by the ears like the two doughty but stubborn champions of old, who, viewing each the side of the shield opposite to him, and that alone, went fairly to blows and exhausted their strength, and learnt many a good lesson during the process ere they discovered that, they had both been alike right and wrong from the first; and I hope that the issue of our discussions may prove equally satisfactory to both parties in the end. Architecturally speaking, the public, I think I may assume, sides generally with the inhabitants of Bagdad, or whatever the city may have been in which my prototype as a street-crier raised his siren voice; and, without doubt, there is much to be said in favour of that view of the subject. Buildings do not, like wine, improve practically by keeping. Stone will perish, wood will decay, and though they gain many a charm during the process, as the dolphin is said to do during that of dying, the improvement is only in an æsthetic point of view. New brooms proverbially sweep clean; and as the public look solely to their sweeping capabilities, new brooms in their judgment must be the best. Professional men, on the contrary, judge, and judge rightly, from an opposite point of view, a certain kind of weathering by the hand of Time, is almost essential before they even will consent to look with any satisfaction upon a building. There is a crudeness about fresh work, especially after it has been flayed by the process of cleaning down, in which masons delight, but which true architects detest; and this crudeness age softens so surely, that it will turn at length a bare wall into a thing of beauty, decking it with lichens and mosses, staining and weathering it by both rain and sunshine, and by every smile of the one and each tear of the other, leaving a trace of gentle loveliness behind. Nor is this judgment rightly formed upon such adventitious grounds alone, but in these days of haste and scurry the chances are small that equal care will be bestowed upon the new lamp that was given to that which it is to supersede. We live in the first, and, indeed, the only age in which architecture as an art has been utterly scorned and neglected; so that if a building doomed to destruction has any conceivable merit or interest (and it is strange that any could have been erected without) a professional man, alas! now-a-days, judges tolerably rightly if he assumes that a positive damage is about to be effected, and that no attempt will be made to do anything which might be a compensation for the loss inflicted.

There are times, however, when both parties would unite in a feeling of hopeful expectation when a new lamp in architecture is proposed to replace an old one; and never did such opportunities occur in greater profusion than at the present day, when in one's walk abroad one sees, here and there, as in the Strand, occasionally of late, a great hiatus in its mean higgledy-piggledy ranks of houses, and a vision of some compeer for the stately Charing-cross hotel flits across the imagination, or, at least, a hope that the successor to the demolished hovels can hardly fail to be an improvement. All may view with hopeful satisfaction the doomed streets now threatened by the razzias of the several railway companies, save when a gem, such as the insurance office by Woodward in Bridge-street, Blackfriars, happens to be marked for destruction, together with the acres of rubbish surrounding it. But what do such feelings of complacency speak for a city, through which such wholesale demolitions can take place without fear of injury, simply because there is nothing to injure? Few, indeed, as yet have been the victims worthy a passing sigh, yet it is said that Mr. Somers Clarke's bold block of buildings, near Smithfield, has been improved from the face of the earth, by the omnivorous London, Clatham, and Dover Railway Company, and one must sympathise

somewhat with Mr. Fowler's plaintive epitaph over his own architectural bantling—the late Hungerford Market. Still, London has been pretty well cut and carved about of late, and is likely to be so in an increasing degree, and I fancy few professional tears will be shed over the slain. Would that there might be more hope of gain than of loss by the stupendous changes witnessed in our days! But, as yet, the rebuilding after the great fire of London has little fear of being worthily emulated, and Wren's happy grouping of towers and spires, does not seem likely to be put into the shade, by the huge hoiler sheds and mansard roofs at present in fashion, and rising up on all sides around them.

Again, there are times when the opposing champions, still loth to lose an iota of the beauty of their own side of the shield, by some chance do get to see the rival claims of the other, and are forced to admit that its admirers have grounds for maintaining its merit. As a case in point, I may mention that to which Mr. Beresford Hope has lately called attention—I mean Burlington House and premises, which is now threatened with extinction, to find room for the proposed new Royal Academy. The building is interesting, as one of the last of the hotels of the nobles standing within its own enclosure, and as the work of a distinguished amateur architect, Lord Burlington himself, possessing considerable architectural merit and picturesque effect in the internal arrangement of its court, with its screen walls and colonnades, so that it would be a decided loss if it were either destroyed or mutilated; and yet the site which is not very usefully occupied, is so valuable, and has been appropriated to so good a purpose, that it becomes a serious question whether its retention need interfere, and, if so, should be allowed to do so, with a great public object, such as the proper housing of the Royal Academy. Not having personally examined into the matter, I should be sorry to express a decided opinion with respect to it; but it may be safely assumed that Burlington House is a building of a class that deserves tender and careful treatment, and any scheme or design which would materially alter or supersede it, should have its superior merits unquestionably demonstrated before sanction be given to it.

But a fruitful hone of contention for the two parties is the sister metropolis of Paris, the example of which, in all its ruthlessness, is being imitated in the principal towns in the provinces. No country was richer in mediæval picturesque of domestic architecture. Already this must be counted a thing of the past. The unfortunate old lamps stood in the way of the projected new ones, and had to make way for them, and the few that were spared, like the noble Tour de la Boucherie, stand like idle and isolated fragments in a museum, or worse, for they have been furnished up and lacquered to harmonise with the smart neighbourhood which has sprung around them. Here the vendors of the newest goods have had it all their own way; and can we not agree upon the character of the result? Let us sum up the several advantages and disadvantages of the change. On the one side of the account may be named the euphonious attributes of order, regularity, and symmetry. Cannon may now rake and squadrons charge unchecked from one side of the city to the other through its wide straight streets; the houses are all to regulation pattern, as if cast in a mould, clean and neat, certainly, but terribly monotonous. The advantages, so far as of a practical and sanitary character, cannot be over-estimated, but it is a mistake to suppose that cleanliness and architectural variety cannot be combined. However, as regards the character of the new lamps, it might be well not to be captious, and, since tastes differ, to remain content with the difference, and, following our own views in our own works, to let our neighbours enjoy the same liberty; but I think we have both a right and a duty of interference when we see a wanton neglect and destruction of valuable old ones, such as is, in fact, taking place throughout France, not in consequence of any necessity to supersede them, but out of mere impatience at the effect time has produced upon them, a mere childish dislike of the colour which age has produced, and which in reality is a charm both in an æsthetic point of view and from association. Useless therefore though it may be to do so, it is, I think, incumbent upon us to raise a warning voice when we see a mad furor for scrubbing and lacquering up old monuments to correspond with garish new neighbours, seize any nation, to which has been committed the charge of such noble architectural structures, as stud the whole country of France. Rouen, within my memory, has been swept almost clean of its picturesque street domestic architecture, and its fine churches and public buildings stand isolated and out of harmony with their prim Parisian-like modern surroundings; and many of those have been flayed in the modern Imperial fashion by taking off a quarter of an inch of the surface of the stone to get to a new white one beneath, and with that

quarter of an inch of stone has irretrievably gone all the spirit and actual handiwork of the original builders and sculptors, and all that rendered them trustworthy studies for future architects and artists. Carcassone is being turned into a toy upon a large scale by the restoration of its mediæval fortifications, which have neither purpose nor use in the present day, but which in their ruin were both picturesque and interesting to the student; and though the research and skill with which it is being carried out under the superintendence of M. Viollet Le Duc deserves high praise, that skill would have been far better expended, and at far less cost, on a model to be placed in a museum, such as those of the Parthenon and other Temples of Greece which are in our own British Museum; whereas it would be, I think all would allow, quite absurd and wrong to have attempted the actual restoration of those buildings themselves. And yet, the absurdity of the work being done at Carcassone is only less, in so far as the buildings themselves are less worthy of the cost, and their ruins a smaller loss to the world than those on the Acropolis would be; still they are lost unquestionably, while the restored and useless buildings being given us instead of them are a very questionable gain. No one interested in architecture or art, and who is at all aware of the rapidity and extent to which such destructions and misadventures are being carried abroad can contemplate the result without a deep feeling of despondency, and I may almost say despair. If he have revisited any place which did possess such interest after an interval of a very few years, I will be bound to find that the besom had been hard at work since his former visit, and that he missed many a valued and old friend among its buildings, and found little or nothing that could compensate for its loss. As for my own feelings, I confess that in such case they are very like those of Rachel mourning for her children, and that comforted I cannot be. Indeed I have often questioned, but am not physiologist enough to supply an answer to my own query, the utility of the numerous and exquisitely sensitive nerves the human body is surrounded with—implements it would at first sight appear for keeping it continually on the rack either with toothache, earache, or some of the other thousand aches which visit our frail humanity. In the same manner it is difficult to perceive the object of striving in the present day to instil into anyone a sense of the beautiful in art, seeing that it must entail upon its unhappy possessor an infinity of pain and distress. While ignorance was bliss to him, he could take his daily walks in town without his mind being disturbed by the incongruities its streets present at every turn; but educated to know architectural right from wrong, he is like a porcupine with its bristles all rubbed up the wrong way.

Other questions that have sorely perplexed me are—what is the use of architecture? and what induces any one to enter the architectural profession? I speak not of those seeking a comfortable district surveyorship, or the official position of an architect to a corporation. No doubt such do get their reward, and loaves and fishes, or the price of them, do find their way into their exchequer, and even tickets for turtle soup may fairly enter into their calculations. But I am speaking of those who propose to follow architecture pure and simple, and I ask again wherefore? It is evident that no one wants them or their art. There is hardly a patron living who would not dispense with the nose of the Venus de Medici, if there were any chance of his being able to effect a saving by the omission. Fortunately among artists, there is a certain esprit de corps which I can describe best by terming it a bias towards kicking against the pricks, and no architect has a chance who does not possess a good share of it; for he will find very early in his career that the art to which he has given such study, and for which he feels such an enthusiasm, is held in but small account by his employers, and that it would appear as if it were mainly for his own gratification, or, for the advantage of posterity, that he should continue to give it his attention at all. Still, not for a moment would I counsel any one who has put his hand to the architectural plough to draw back, but rather to accept the life-long necessity of being obliged to kick against pricks, and then to kick both vigorously and continuously, as doubtless in the end he will find he has made some fair impression, and reaped a fair amount of reward.

I fear you will think that in these remarks I have been digressing from my subject, but I told you that the non-professional and the professional sections of my audience would naturally be in antagonism, and I have been led away by the analysis of their differences, and can only promise to endeavour to heal the breach hereafter. There is unquestionably a sadly vicious hankering after novelty for novelty's sake in the public mind, and old lamps stand little chance of due consideration when new

* A paper read by J. P. Siddon, on the 5th inst. before the Architectural Association.

ones are proposed in exchange. It behoves therefore the profession to watch most jealously, in the interest of all that they alone seem to know the true value of, and accordingly the Royal Institute of British Architects has a permanent committee appointed, entitled the Committee for the Conservation of Ancient Monuments, and I should like to give you some idea of the work which has fallen to them during the single session coming to a close. Having received information of damage being done or threatened to Lincoln Cathedral, the Tower of S—, Taunton, the Screen of Christchurch, Hants, St. John's Church, Leeds, and Colston's House, at Bristol;—and having investigated the facts, an address was sent to the proper authorities, in each case, at their advice, by the Council of the Institute, praying them to reconsider what they had determined to do, and to preserve unmutated the precious structures which have descended to them as heirlooms from the past—not to be wantonly altered to serve a passing purpose, but tenderly and reverently cared for to hand down in no worse condition to generations yet to come. And I am happy to be able to add that, though at Lincoln the stupid and barbarous course that has been for some time adopted there of hacking off the surface of the stonework, to get rid of the effect time has produced, appears at present to be obstinately persisted in, and from Bristol no satisfactory response has been received, yet in all the other cases, their respectful remonstrances have been listened to, the projected works stayed, and an assurance given that the advice of the Council would be followed. The Institute has published some admirable papers addressed to the promoters of, and to workmen engaged upon works of restoration, and I commend them heartily to the consideration of all, and would beg any persons under whose notice may come similar acts of Vandalism, to give timely notice to the Institute, who will not fail to act upon such information. Ho then: to the rescue of all old lamps that are worth keeping while there is time. Look jealously at the assertion, even of your own heart's prompting, as to the expediency of parting with them for new ones; and when it really becomes necessary to repair or to restore them, do it honestly—let the repairs be at once distinguishable from the original work, and in no wise to be confounded with it. And above all do not attempt to alter or tone the old work to make it correspond with the new; for time is a sure and certain harmoniser of all such discrepancies, and by far the best that there can be, and never upon any account, attempt to renew the more artistic work, such as the painting or sculpture. The noseless, nay beadless, statue of ancient date is of infinite value, and each spectator can sufficiently well restore, in his mind's eye, the missing portions, whereas a scraped and restored statue is of no worth whatever, but is verily a new patch in an old garment, making the rent worse. Erect new buildings elsewhere, like the old if you will, and paint and carve them to show what you conceive the old ones were in their prime, or what you would prefer instead; but do not do what is equivalent to re-writing half illegible manuscripts, and so substitute what you conceive, certainly in error in many points, to have been the author's meaning, and thereby absolutely prevent anyone else from discerning anything at all but your misplaced scribbling. But in very deed, I feel that I am a pretty fellow to come before you as a hawker of new lamps, as I led you to expect that I should, when up to this time I seem to have been, like Balaam, instead of blessing, cursing them altogether. But the truth is that I have such a veneration for the sadly dwindling stock of really old and valuable goods, that I dare not otherwise than plead for their preservation under all circumstances. I am anxious enough "to ring out the old and to ring in the new;" but it is not such old work I would ring out, for which no new could possibly compensate.

The old that I would fain ring out, are not the priceless treasures which have come down to us from either the classic or mediæval times, the very dust of all of which I almost worship—nay, not even the quaint relics of the Elizabethan era, with all their impurity of detail, or the modest and homely fragments remaining of Queen Anne's date. I would even, with Mr. Butterfield, crave the modern destroyer to spare the Adams' work of the Adelphi, weak as that is, but showing some careful thought and study; and I would further ask for mercy to that of Soane, and, indeed, of every man who truly, however mistakenly, did his best, and has left a mark of the feeling, the studies, the fashions of his day in his works. They will all perish fast enough—some through foolish restoration, some from stern necessity, some from mere whim—in the rapid march of modern changes. Let architects, at least, pause before they counsel or consent to the wanton destruction or spoliation of old work of any architectural character, whatever may be their own views concerning it, for it can hardly be denied to have

some merit, and a living dog is better than a dead lion; live then, and let live, and commit no architectural murder.

It was mainly with reference to the future that I raised the cry of "New lamps for old ones," new ones to replace existing ones which have no claim to our interest, and new ones to supply the ever-increasing demands of our age. Here we need no spurious antiquity. Here, no precedents should interfere with the most literal and common sense adaptation to the requirements we may be called upon to fulfil. It is true that each architect must learn the language of his art from the past, it being absurd to suppose that any or all could compose a new one for future use. But he must himself be the master, not the slave of the language he has learnt, and he must be able to express by and carry out in it whatever he may be called upon to do. It is of the greatest importance to select, and to thus master the best language possible; or, at least, a thoroughly good one, if there be really a choice of such. It should be a language capable of the expression of absolute truth—it would, indeed, be well if it were incapable of expressing anything but the truth, the whole truth, and nothing but the truth. And there would be something grievously wrong, one would think, if an architect were to choose, or be educated in a language, the basis of which should be falsehood or sham, and that Cretan like, could only speak truly in acknowledging that its very foundations were laid in falsehood, and brazenfacedly vindicating its right to the use of sham, as its method of decoration, its manner of building, its character, and its style. Here some of you will surely be desirous of asking if, in reality, there can be such a style as I have described, and I regret to have to answer you in the affirmative; and, further, that it is the vernacular style of the nineteenth century in the most civilized countries of the world. In some parts, which have not emerged from barbarism, as in China, a natural and truthful architectural language, though not a high class one, is still used, and an enlightened nineteenth century architect has recorded in an early essay of the Architectural Publication Society his discomfiture, in the endeavour to teach them his untruthful one as a substitute. While their own quaint forms and grotesque ornaments were soundly built and firmly fixed, his untempered daubing came clattering down, and his plaster decorations refused to cover the nakedness of his walls. And the advocates of this style—for advocates, strange as it may appear, it even seems able to count upon, ground their only argument, save that of the exceeding expediency and delicate whiteness of their lies, upon the *tu quoque* basis; falsities may also be detected, say they, in mediæval and modern Gothic. Such may be, but they are in no wise an essential of the style, but can and should be swept away without remorse. But see the vernacular Italian in the hands of its highest masters. St. Paul's, by Sir Christopher Wren—one half of its visible walls a mere sham, a mask to hide the roofs that even his genius could not in so intractable a style deal with, and so was obliged to hide. St. George's Hall, Liverpool, its utility sacrificed to a false monumental character, and gas light, consequently, the sole means of lighting in the day time its gloomy corridors. Time, however, would fail me were I to attempt to chronicle its massive façades poised upon plate glass, its shelterless porticoes, its toppling cornices, and broken pediments. These are the old lamps I would counsel you to get rid of. Whether one examine the streets of this metropolis, or of the towns in the provinces, it must be acknowledged that the condition into which architecture has sunk is pitiable in the extreme, and frequent are the hideous boxes in their suburbs in which both rich and poor are housed, and the very aspect of which is sufficient to blunt every sense of beauty and art in their unfortunate inhabitants, while most of the mansions which stud the face of the country, are but blots and disfigurements in the landscape. Such is the condition to which three centuries of mistaken Italianising has brought us to. Such are the old lamps which I would ask you to exchange whenever you have the opportunity. But what do I offer you in exchange? That, after all, is the question, lest in flying from known evils, you fall into others even worse that you know not of. The first thing, then, that is requisite is, that the public should take some interest in their lamps, some little care whether they are good or bad. It is of small use for the architectural profession to bestow pains and thought on their work if those by whom they were employed set no value upon their labour and their art. Nineteenth, or even a larger proportion of the monstrosities I have been deploring are not chargeable upon the profession at all. The one great reason why this modern vernacular style is in vogue, is that any speculating builder can work in it without professional assistance. But the ultimate economy of this may be shown to be very mistaken, for the public are by no means wedded to the common place,

and seem to appreciate any attempts to break through it. Indeed, by some rather frantic efforts of late to get out of the beaten paths, it would seem as if they were almost too ready to welcome those who would cater for it in the way of variety. At any rate, looking at the present opportunities to which I have already referred, I think the profession is not in need of a Dr. Marigold to vaunt its wares. What it has to do is to see that its wares are worth the vaunting—that they have some intrinsic merits besides those of being brand new, like the belongings of the Venering family. So, with regard to the new lamps you are to receive in exchange, the innate modesty, for which the architectural profession is so conspicuous, and the short time which I have been able to devote to this paper, must now bring my lecture to what, I fear, you will think a premature end.

RECORDS AND STATE PAPERS REFERRING TO IRELAND.

In a recent "Treasury Minute on Record Publications," the following references is made to the publication of Irish State Papers:—

"A calendar of a collection of very valuable MSS. relating to Ireland, known as the Carew Papers, deposited in the Library at Lambeth Palace, is also in course of preparation, under the direction of the Master of the Rolls. A volume will be published in the course of the summer. These documents emanated from the highest authorities, and consist in many instances of narratives of the proceedings of the Irish deputies, which were intended for no eyes but their own or those of the Home Government. These materials for the history of Ireland are not only unique in themselves, but bear on the face of them marks of their high value and importance, and a complete calendar of them cannot fail to be welcome to all students of Irish history.

"In the Bodleian Library at Oxford is a large and very valuable mass of papers, well known as the 'Carte Collection.' Her Majesty's Government, at the suggestion of the Master of the Rolls, ordered these papers to be carefully examined. It was found that a very large portion of them were public documents which seem to have been unwarrantably removed by Carte, the historian, from Dublin; and as it is now impossible to restore them to Ireland (they having become the property of the University of Oxford), the Master of the Rolls recommended that authenticated copies, in duplicate, should be made of all papers of a strictly official character; one copy to be deposited in Dublin for public use, and another in the Record Office in London. Two Irish scholars of literary and historical reputation, the Rev. Dr. Russell and Mr. Prendergast, have been commissioned to make the selection. They have already examined in detail 25 folio volumes of 500 or 800 pages each, containing upwards of 8,000 documents, and out of these they have selected for transcription about 1,754 official documents, consisting of Royal letters, public and confidential; letters of the Lords Justices and the Earl of Ormonde; correspondence on public affairs, civil and military; letters from Queen Henrietta Maria and Prince Charles; papers concerning the cessation of arms, and the peace of 1646 and 1648, and a variety of other matters too long to enumerate. In the transcription of these papers considerable progress has been made."

The projected publication of records comprises as regards Ireland—

1. A volume entitled "The Wars of the Danes in Ireland," written in the language of the eleventh century: the text is Irish, with an English translation on the opposite pages. The editorship of this important chronicle was entrusted to the Rev. Dr. Todd, President of the Royal Irish Academy.

2. A volume entitled "A Roll of the Irish Privy Council of the Sixteenth Year of the Reign of Richard the Second," from the muniment room of the Marquis of Ormonde, in Kilkenny Castle.

3. A volume entitled "Chronicon Scotorum," written in Irish, and extending from the earliest times to the year 1135, with a short continuation to 1150.

Through the liberality of Parliament, their lordships have also been enabled to have a complete translation made of the ancient laws of Ireland. This has been a work of great labour, requiring the co-operation of persons conversant with the ancient characters and language in which the MSS. of those laws in Trinity College, Dublin, the Bodleian and the British Museums, are written. The translations extend to 17 volumes, and the first publication has appeared under the title of "Senchus Mor," which is the first code of Irish laws framed between the years 438 and 441.

These laws, which formed a very complete code, my lords desire to remark, were the actual laws recognised and acted upon by the people of Ireland for a period of more than 1,000 years; and it can scarcely be doubted that they have had, and may have even at the present day, important influences on the national character.

THE O'CONNELL MONUMENT.

THE Committee met on the 6th inst. at the City Hall, for the purpose of receiving new designs. The minutes of former meeting were read and confirmed.

Mr. Martin Crean (hon sec.) stated that, in pursuance of the resolution passed at their last meeting, he had written to the three architects then selected to send in designs for the monument—namely, Messrs. McCarthy, Butler, and Madden; the two latter had sent in designs. Mr. McCarthy had written a letter thanking the committee for naming him, but declining to send in a design, as he thought the architect should arrange with the sculptor as to the monument. Mr. Crean also stated that Mr. M. A. Hayes had sent in a couple of designs, and that Messrs. Butler and Madden were to receive £20 each for theirs.

The chairman suggested that the best course would be to refer the matter to a sub-committee, and let them report to the general committee.

Mr. Tracy moved that Mr. Whelan, T.C., Rev. John O'Hanlon, Mr. O'Brien, Mr. Keegan, Rev. Dr. Spratt, Mr. Gorman, Rev. Canon Pope, and Mr. Bianconi, be appointed a sub-committee to report to the general committee, within one fortnight, on the merits of the designs. The designs should be left in a place where the general public would have an opportunity of judging of their merits.

The Rev. Mr. O'Sullivan inquired if the committee would be obliged to receive one of the designs?

The Rev. Dr. Spratt considered they would not be bound to receive any of the designs.

Mr. Keegan thought it would be unjust not to judge of the former designs, inasmuch as those now set in were only copies of some of them.

The chairman said that was an assertion that should not be made lightly. It was not fair towards the two gentlemen who had sent in the present designs.

The Rev. John O'Hanlon remarked that the function of the sub-committee would be only to report on the matter.

The hon. sec., in reply to a question, stated that the designs could not be exhibited in the Council Chamber.

After some conversation as to the most eligible place for exhibiting the designs, together with any others that might be sent in, it was resolved that they should be exhibited in the Catholic Hall, Denmark-street, after they had been examined by the sub-committee now named. The committee are not, we fear, likely soon to be released from their labours.

LAW.

COURT OF COMMON PLEAS.

THE LODGING-HOUSE QUESTION.—*Ganly, appellant v. Halligan, respondent.*—Appeal against a conviction by the magistrates of the appellant, for having unlawfully kept and used a house in Erne place as a public lodging-house, said house not having been registered as a public lodging-house in the book duly kept for the purpose, pursuant to the Town Improvement Act of 1847, the Dublin Improvement Act of 1849, and the Dublin Improvement Acts Amendment Act of 1864, and the bye-laws for the regulation and registration of public lodging-houses in the borough of Dublin, made in the Municipal Council of the borough in 1851 and 1864.

Mr. Sidney, Q.C., opened the appeal and contended that as the appellant did not reside on the premises, and had let the house unfurnished in tenements, that the statute did not apply to this case, and that he was not the keeper of a lodging-house within the true meaning of the statute. Counsel reviewed the several statutes referring to lodging-houses both in England and in this country, and submitted that the conviction ought to be quashed.

Mr. Dowse, Q.C., and Mr. Norwood appeared contra. The justices had convicted the appellant as being a lodging-house keeper within the meaning of the 24th section of the Dublin Improvement Acts Amendment Act of 1861, and inflicted the mitigated penalty of 2s. 6d., holding that the statute applied to him; that he was in beneficial receipt of the rents, and had received the notice to register previous to the issuing of the summons, with which notice he had not complied. Counsel submitted that irrespective of the bye-laws the case of the appellant came exactly within the 24th section of the statute.

The Court unanimously sustained the conviction. This decision will compel the owners of over 9,000 houses in the city to immediate registration under the act.

TRADE STRIKES.

It is gratifying to know that there is hope of a termination to the present strike of house-carpenters in Belfast. It is especially to be regretted that any misunderstanding should exist between the employers

and the workmen at present, when the building trade is so flourishing. It will be remembered that a short time ago the men requested that they should be allowed an hour for each meal, instead of three-quarters of an hour. Some of the employers refused the request, but the majority have complied with it, and there are upwards of 400 carpenters now in employment, only some 150 being out, and it is expected that the privilege will also be extended to these. A short time ago the bricklayers and stonecutters obtained the favour from their employers which the carpenters now seek.

The wages movement has extended to Newry, and the subject of increased payments is about to be considered at a meeting of labourers, who, we trust, will not be induced to take any steps prejudicial to their own interests. Several summonses have been issued within the last few days, against the persons who have left their employment without notice.

The strike that took place among the tailors of Limerick has terminated. The strike has ended in the giving in of the men.

MONUMENTS, STATUES, ETC.

A handsome stained glass east window, painted by the Countess of Desart, and dedicated by that lady to the memory of her husband, the Earl of Desart, has been placed in the Parish Church of Burnchurch, Co. Kilkenny.

The officers of the 4th Dragoon Guards intend erecting a monument in Castleconnell Roman Catholic Church in memory of the late Mr. Jasper White, cornet of that corps.

IRISH BUILDING NEWS.

GENERAL.

A new Coast-guard station is to be built at Blacksod Bay, Co. Mayo, to consist of two houses, a watch-tower, store, and boat-house. At Donaghadee also, a boat-house, carpenters' workshop, enclosure walls, and launching slip are to be built.

The long dry season of last year having warned those public boards who are responsible for an abundant supply of water in the places under their control, the governors of the Letterkenny Lunatic Asylum are taking steps to sink a well within their boundary wall. The Lurgan Town Commissioners require an experienced man to superintend the sinking of several new wells, and the deepening and improving of a number of the existing new ones.

A new County Hall is to be commenced immediately at Carrick-on-Shannon. Mr. J. S. Butler, architect. Mr. Butler is also carrying out some improvements at the Lunatic Asylum, Maryboro'.

The Athboy Drainage Board are erecting a new weir at the Athboy Mills, and are widening and deepening the river between Girely and Athboy Bridges, under the superintendence of Mr. Twemlow, C.E.

The separate system is about to be carried out in Mayo Prison, and in order to afford the necessary accommodation, new buildings are to be added, and considerable alterations made in the old.

Lord Annaly is about to build new farm offices on his estate at Farran, Co. Limerick. Mr. Cox, architect; who has also been employed by Lord Derby's agent, to build school-houses and teachers' houses, on his lordship's property at Monard, Co. Tipperary.

A gentleman who has property in Ballymacarrett, Belfast, having granted a free site for a school-house, the whole expense has been undertaken by Thomas McClure, Esq., J.P., and the school-house is now completed, and in daily use. Cost of building and fittings, £450. Mr. Jackson, architect.

That popular watering-place in the County Down, Bangor, has within the last few months been much improved. A fine pier has been constructed, and the Town Commissioners have had pumps erected in the principal streets. The directors of the Belfast Bank have contracted for the erection of a fine building on the site of the old Meeting-house, on a line with the Royal Hotel, where they will open a branch of their establishment. The foundations of the new hotel, near the Pickie Rock, are now well advanced. There will be three hundred bed-rooms, with private rooms, and a public refreshment-room, where some hundreds can be simultaneously accommodated. The front of the hotel will command a splendid sea prospect, looking directly out into the Atlantic. There will be an arcade connected with the hotel, which will form a passenger and carriage road round the rocks, resolving itself into a circular form, and enabling parties to return to the town by the Crawfordsburn or Belfast roads.

The guardians of the Thurles Union, having only a small room to devote to the purpose of a drying-closet, require it to be fitted up on an economical but effective plan.

The large provision stores in Tomb-street, Belfast, the property of Messrs. J. and T. Sinclair, destroyed by fire in the month of April last, are to be rebuilt on an extensive scale. Messrs. Lanyon, Lynn and Lanyon, architects. The same firm are also engaged in the erection of new wine and spirit stores in Adelaide-street, Belfast, for Messrs. Dunville and Co.

The erection of an extensive steam-loom weaving factory, the property of Messrs. J. H. and G. Bellas, has been commenced at Ballymena, Co. Antrim, on ground situate between the goods station of Northern Counties Railway and the bleachfields of Messrs. Wallace and Magill, at Leighenmohr. The building is to be completed within the next four months, and the cost of its erection will be over £1,000. It will cover an area of 175 ft. by 180 ft., and will afford accommodation for 200 looms.—Mr. James McMaster, of Belfast, builder.

The New Ferry Gate, Londonderry, contracted for with the Corporation by Mr. Matthew McClelland, builder, &c., at a cost of £750, is to be commenced immediately. The new gate will have a main and two side arches. The first will be 17 feet high by 18 feet wide; the latter will have 5 feet of span and 10 feet of height. Both fronts will be finished in finely wrought freestone, with rusticated ashlar quoins. The keystones of the arch will be carved into memo-heads, and the structure will be surmounted by a handsome parapet, with freestone balustrading. The design was furnished by the city engineer, Mr. Collins.

An extensive new building is to be erected at Mount Anville, Dunderm, the late residence of Wm. Dargan, Esq., for the nuns of the Sacre Cœur, who have lately purchased the beautiful house and grounds above mentioned. The new building consists of a main block, 340 feet long, with wings projecting at either end. It is occupied by extensive study halls, dormitories, music rooms, refectory, &c. The elevations are of the plainest possible description, owing to circumstances over which the architects (Messrs. Pugin and Ashlin, of Ely-place and St. Stephen's-green) had no control. The entire cost will be about £10,000.

ESTABLISHED CHURCH.

The high sheriff of County Sligo, has offered £100 towards the renovation of the Abbey, provided it be carried out as a memorial of Lord Palmerston. The local press suggests the calling of a county meeting, to decide on the most appropriate testimonial to one who spent so much of his Sligo income in the improvement of his property at Mullaghmore and Clifony.

ROMAN CATHOLIC CHURCH.

A new reredos is to be erected in the Roman Catholic Church of St. John, Kilkenny. Mr. Butler, architect.

The additions, consisting of a new west front and spire, to the Catholic Church, Listowel, Co. Kerry, are rapidly approaching completion. The spire is almost finished, wanting only the addition of the beautiful wrought iron cross, from the works of Messrs. Hodges and Sons, Westmoreland-street, Dublin. The cross was made from the design of Messrs. Pugin and Ashlin, the architects to the church, and is a very creditable specimen of native workmanship. A novel feature in the spire is the four spirelets, rising at the broach, the effect of which is good. The details of the works are being carried out with spirit and effect, and great credit is due to the architects, and to Mr. James Scanlan, of Elgin-road, Dublin, for the faultless manner in which he has carried out the designs.

The dedication of the Church of St. Mary, Ardee, took place on the 3rd inst. The additions to the building, which have in a great measure re-modelled it, are intended as a memorial to the late Canon Levis, the former parish priest, who died in 1863. The church is 135 ft. in length, and consists of nave, aisles separated from the nave by piers and arches, and a chancel, with side chapels, which are the additions recently made. The chancel, the altar which stands within it, the stained glass windows, and the decorations in all their details, are in the style of the fifteenth century. As the ground falls towards the chancel or east end of the church, this facility for constructing a crypt was availed of, and in the large crypt furnished with an altar now lie the remains of the priest to honour whose memory these works were designed. A series of six steps leads up from the floor of the nave to the chancel, which is 26 feet wide by 26 feet in length. Over the altar is a five-light stained window, and on the north and south sides are two-light windows also of stained glass. The ceiling is divided into panels, and decorated. The fitting up and embellishment of the chancel with the altar, stained glass, metal-work, &c., reflect credit upon the

Irish talent and taste, both in designing and workmanship, which were exerted here by the staff of Messrs. Earley and Powells, of this city, by whom the works were executed, under the superintendence of Mr. J. J. McCarthy, architect. The altar and reredos are of Caen stone, and inlaid with various coloured marbles. On the frontal of the altar appears a well designed group, the subject being the Last Supper, and, in panels at the side, the symbolic wheat and grapes. The table of the altar is supported on red marble shafts, with beautifully moulded bases and elaborately carved capitals. The reredos is divided longitudinally into seven compartments. In the central space, under a richly carved canopy, is a sculptured group of the Adoration of the Lamb. In the two compartments on both sides of the centre are groups of the four sacrifices of the old law—Abel, Noah, Abraham and Isaac, and Melchisedec. They are also overhung by rich and elaborate tabernacle work. At the extremities of the reredos are nobly sculptured figures, nearly life size, representing the Synagogue on the Epistle side, and the Christian Church on the Gospel side. They stand on pedestals of green marble and are surmounted by open and carved canopy work carried up to a considerable height. Immediately over the reredos and apparently springing from and forming part of it, is a five-light mullioned and traceried window filled with stained glass, which for purity of design and conception of the subjects forming it, and for harmony of colours, has not been surpassed since the revival of glass painting in latter times. The subjects are taken from the life of St. John the Baptist, the patron saint of the venerated priest whose memory is to be held in remembrance. The central group is the baptism of Our Lord in the Jordan by St. John. In the extreme compartment on the Gospel side the subject is the angel announcing to Zachariah that "a son shall be born unto him." The next compartment contains the Holy Family, consisting of the Blessed Virgin, with Our Lord, St. John the Baptist, St. Joseph, and St. Anne. The compartment next the centre on the Epistle side, contains the Preaching of St. John in the Wilderness, and the extreme space on the Epistle side contains the Decollation of St. John. The floor of the chancel is an elaborately decorated monumental cross, indicating the exact position of the grave of Canon Levins in the crypt underneath. The floor of the chancel is laid with encaustic tiles. The altar railing is of wrought iron, and divided into panels, in the centre of each of which are monograms of the holy name, and representations of the chalice and host alternately with the monograms, while all these are encircled with shamrocks. The walls are coloured deep marone and powdered with gilt floriated crosses, and at the jambs and splay of the windows are coloured borders. Amongst the decorations of the ceiling are to be seen numerous devices of the Passion, and also monograms of the Holy Name. The pulpit, which is of a semi-octagon shape, in the Gothic style, was by Mr. Joseph Digges, of Lincoln-place, Dublin. This pulpit, with its neat stairs, &c., is constructed on a movable platform base, with invisible rollers underneath, which enables the entire structure to be easily removed aside when not required.

TENDERS REQUIRED.

For building school-rooms, dormitories, &c., at the South Dublin Union, according to plan and specifications at clerk's office. Tenders to 21st inst.

For the erection of the new Catholic church of Ematria, Co. Monaghan; Mr. W. Hague, architect, Dublin. Tenders to 30th inst.

By the Royal Engineers, for laying on gas to the barracks at Newry. Tenders to 30th inst.

For building a boat-house, carpenters' workshop, enclosure walls, launching-slip, &c., for the Coast-guard station at Donaghadee, Co. Down. Tenders to 25th inst.

For certain works required in making alterations and additions to the Court-house at Omagh Mr. W. J. Barre, architect, Belfast. Tenders to 30th inst.

For building an addition to the Celbridge Workhouse Infirmary. Tenders to 20th inst.

For farm offices, on Lord Annaly's estate at Farran, Co. Limerick, Mr. W. S. Cox, Limerick, architect, to the 21st inst.

By Messrs. Boyd and Batt, Belfast, for the erection of a weaving factory, chimney, engine and boiler houses, to the 18th inst.

By the Belfast Harbour Commissioners, for the construction of an iron caisson, for their new graving dock, to the 19th inst.

By Mr. Hastings, Belfast, for building a villa at Sydenham, near Belfast, to the 21st inst.

By the Belfast Town Council, for a large quantity of pebble paving-stones.

By the Hon. John Massy, Milford House, Limerick, for the construction of an embankment, along the lands of Drumroe, to 16th inst.

For a new wing and general alterations to Riversdale, Enniskillen, for W. Archdall, Esq., J.P.

By the guardians of Thurles Union, for a drying-closet in the laundry, to 15th inst.

By the guardians of the Celbridge Union, for building an addition to the Workhouse Infirmary, to 20th inst.

By Messrs. Lanyon, Lynn and Lanyon, for offices and stores in Tomb-street, Belfast, to 21st inst.

By the same firm, for stores in Adelaide-street, Belfast, to 28th inst.

For building an almshouse at Armagh, for the Charles Shiel's Almshouses Charity, Messrs. Lanyon, Lynn and Lanyon, architects. Tenders to 2nd prox.

MISCELLANEOUS.

The Belfast Town Council have ordered a steam fire-engine for Belfast; and the Harbour Commissioners contemplate the purchase of a floating one for the river; in the event of a fire among shipping, or in the stores along the quays, the services of such an engine would be invaluable.

The Treasury has employed Mr. Batemen to act in conjunction with Mr. Lynam, on the part of the proprietors, to report on the engineering works necessary for the improvement of the Shannon. The report of these gentlemen is to be ready by the 1st of January next. The river is to be improved in sections, and the prescribed depth for navigation purposes is to be preserved.

Captain H. W. Hire, of her Majesty's screw troopship *Orotas*, has submitted to the Admiralty a plan for utilising the present "bridges" on the upper deck of troop and other passenger screw steam vessels as "lifeboats." The screw now having superseded paddle-wheels in these vessels, the old paddle-box lifeboat is lost as a means of saving life at sea, or of landing quickly any large body of troops. It is with a view to meet this deficiency that the plan now proposed as the joint design of himself and Mr. John White, shipbuilder, of Cowes, has been so far matured. A boat is to be built for the *Orotas* which will also serve as a bridge. It will be 10 feet in width and 50 feet long, the breadth of the ship, and it will be constructed on Lamb and White's patent. When launched from the ship and filled to the gunwale with water, it will, by means of air cases, be able to carry 150 men, each man carrying with him 20lb. of food or stores. There can be no doubt as to the fitness of Lamb and White's patent in the construction of such a boat, and the most important point afterwards remaining for consideration is the mode proposed for getting the boat in and out of the ship from its bridge position, above the level of the hammock nettings to its position afloat on the water alongside the ship, and back again from boat to bridge. This is accomplished in the following manner:—The boat is mounted athwart the ship's deck, as a "bridge," on a platform which is nothing more or less than a set of launching ways, the keel of the boat fitting in a groove, and the bilges of the boat resting on the side "ways." These ways are pivoted in the centre on stout stanchions, and their ends are held in position over the ship's hammock netting on each side by screw stanchions. The ship's bulwarks next these screw stanchions are cut into a large port on each side rather wider than the boat, and when open throw outwards. If the boat has to be lowered, the screw stanchions are lowered on the side required, the port opened, and the boat on its ways lowered down until the lower end of the ways rest on the ship's side over her waterway. The striking up then of an ordinary dogshore releases the boat, and sends her off and afloat alongside the ship. In getting her in again two three-fold tackles, from davits fixed at each end of the ways, lift one end of the boat on the lower end of the inclined ways; another tackle from their further end hauls the boat into its seat; the ways and boat are then swayed into position again, screw stanchions are set up and fastenings made good, and the whole has now become a bridge again. The boat is thus got in and out of the ship without any purchase from her masts and yards. The platform of the bridge is formed of properly fitted planking laid over the boat's thwarts, and left on board the ship when she is sent afloat. The only objectionable feature suggested on consideration appears to be the probable weight of the boat and its ways when in position on board a steamship as her bridge. This, however, Captain Hire will have to deal with; and, if the scheme can be carried into practical effect, a very considerable addition will be made to the troop-landing powers of our screw troop steamships, and to the life-saving powers of all screw steamships at sea.

A company has been formed to establish a hotel on the borders of Lough Erne, in the centre of scenery of surpassing beauty—the pride of the North, as Killarney is of the South of Ireland.

The railway question will be reopened for discussion at the next meeting of the Statistical Society, by Mr. Alexander McDonnell, who will read a paper on the Continental Railway System. The meeting will be held on Tuesday evening next. The subject of the employment of educated women will also be brought under consideration in a paper by Professor Houston.

The will of John Gibson, R.A., sculptor, of Rome, formerly of Liverpool, was proved under £40,000 personalty in England. He has bequeathed £3,000 to the Royal Academy, London.

The most curious work at present going forward in Paris is the levelling the hill of Trocadero, on the right bank of the Seine, opposite the bridge of Jena. One fourth of the work is now completed. The ground is mined, and four mines are fired simultaneously by means of an electric battery. A surface of more than two acres is raised by each explosion, and wagons are ready on a temporary railway to carry away the earth thus loosened.

The survey of the counties of Louth and Dublin is being revised, and the plans of the latter are being redrawn on the 1-2500 scale for the purposes of the general valuation; the original scale of the plans, six inches to the mile, having been found insufficiently large for the valuation of the populous district around the city of Dublin.

Never before were there so many public works carried on in Belfast simultaneously as at the present time. First in extent are the new docks, one of which, on the County Down side, is now nearly completed. The are at least six hundred men employed there daily. The Water Commissioners' new works have also been commenced, and in a few weeks almost as many more men will be employed there. A large number will also be engaged at the Belfast Central Railway, which is at present progressing very rapidly. The permanent way is now laid from the Ormeau road to the Albert bridge, and the contractors are making preparations to go on with other portions of the works. The long-delayed Albert Memorial will also be commenced soon. The diversion of the main sewer from under the intended site, which is the primary step, is approaching completion, and when it is finished the memorial will be at once proceeded with. In addition to these works, a good many private buildings are being erected in different parts of the town. Two large factories are being built on the Shore-road, and a third on the Falls-road. The foundations have also been laid for two extensive buildings in Corporation-street; and sites are selected for new warehouses adjoining the Ulster Hall, Donegall-square, Chichester-street, and elsewhere.

In a recent number of the *Builder*, containing a review of the drawings at the Architectural Exhibition, Conduit-street, London, we were pleased to observe a flattering notice of a "large and handsome drawing" of the Augustinian Church, John-street, Dublin. We understand the drawing is by Mr. T. Hevey, of Messrs. Pugin and Aslin's office. It is gratifying to find the talents of one of our rising young architects noticed by our contemporary.

Gigantic omnibuses on a new model have been constructed in Paris, specially for horse-races and other out-door sights. They are so contrived that upwards of fifty persons can be seated on the roof, and become a kind of travelling grand stand.

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John Hanrick, 85, Sygne-street, Dublin, clerk of works.

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William McCormick, 98, Lower George's-street, Kingstown, builder.
John Henry Dunne, York-street, Dublin, solicitor, builder, and farmer.

TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

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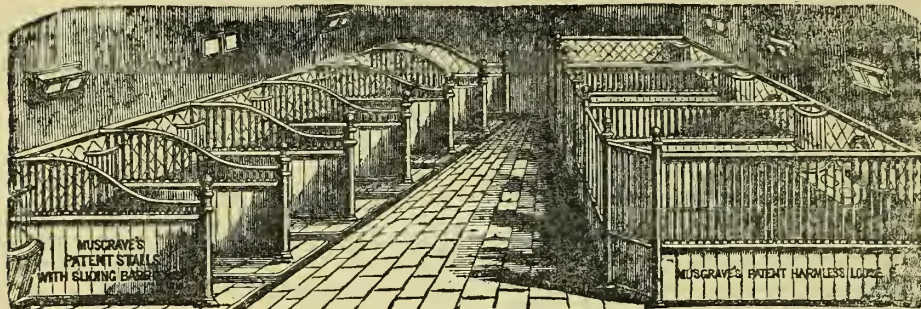
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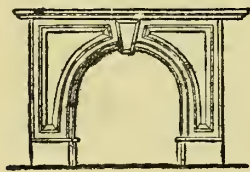
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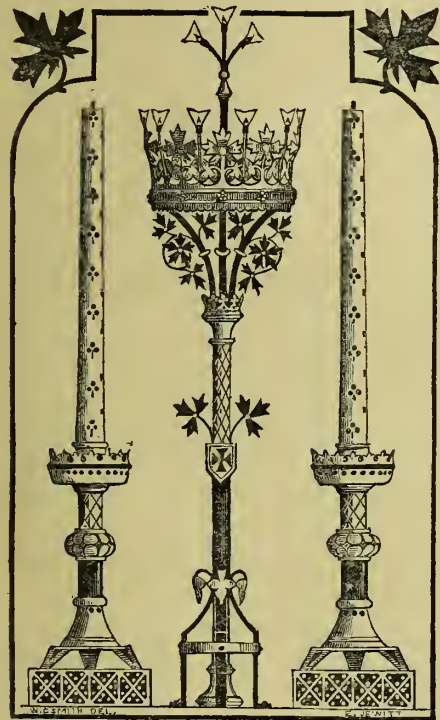
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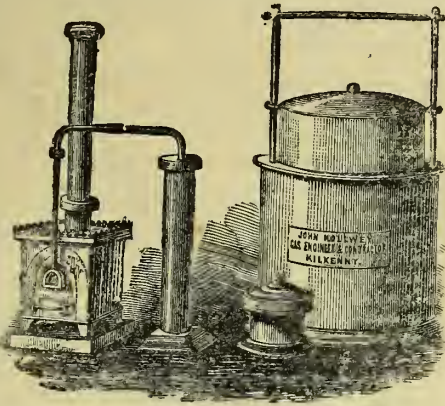
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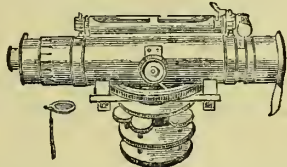
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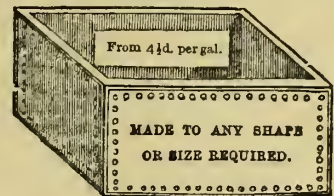


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construction of the Liverpool Docks, Manchester and various
Waterworks, Collieries, and Mines throughout the country,
being so long celebrated for its strong cementitious and connect-
ing powers for Masonry in Water, can be supplied by
Rail or Water to any part of the kingdom, either in lump
(loose) or ground, and in barrels and bags. The Limestone
can be had in full cargoes, also their Cement in barrels, which
is of a very superior quality, and warranted pure.
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MARBLE CHIMNEYPIECES, GRATES,
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rooms, Diningrooms, Bedrooms, Studies, Libraries, also a
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LONDON ROMAN CEMENT,
LONDON PORTLAND CEMENT, and
KEENE'S MARBLE CEMENTS,
Now Sold at greatly Reduced Prices, by
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TESTIMONIALS.

From WILLIAM TITE, Esq., M.P. for Bath, and Architect of the
Royal Exchange, London.

House of Commons, 2nd March, 1864.
DEAR SIR,—In reply to your note, I beg to say that I have
used both the sorts of Cement manufactured by your firm, and
that of Messrs. Francis & Son; I mean the Cement usually
called Roman Cement, or the more recent introduction of
Portland Cement. I believe these Cements, manufactured by
either of your firms, to be equally good. I know no differ-
ence, chemically or practically, between them; and I should
use, and authorize to be used indifferently, either one or the
other. You are at liberty to use this note, if you think it ne-
cessary.—I am, Dear Sir, your obedient servant,
Messrs. White & Son. (Signed) WILLIAM TITE.

From R. O. MINNIS, Esq., Surveyor to Board of Ordnance, London.
War Office, Pall Mall, London, S.W.,
3rd March, 1864.

GENTLEMEN,—In reply to your request, I have much plea-
sure in stating my favourable opinion of the quality of your
Portland and other Cements, which have been extensively
used in the Public Works connected with the War Department
at home and abroad, especially in several of the fortifications
now being erected in this country. On all occasions within
my knowledge the quality has been equal to that of any other
manufacturer, and has given great satisfaction.—I am, gen-
tlemen, your obedient servant,
(Signed) R. O. MINNIS, Surveyor.

THE M'ANASPIE'S
PLAIN AND ORNAMENTAL STUCCO
PLASTERERS, SCAGLIOLA AND STATUE ARTISTS, ASPHALTE
MANUFACTURERS, take contracts in all parts of Ireland,
and sell their statuary and house ornaments for reduced
prices.
31 GREAT BRUNSWICK-STREET, DUBLIN.

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Vessels Sail from KINGSTOWN to HOLY-
HEAD TWICE EVERY DAY on the arrival
of the Mail Trains leaving Westland-row,
Dublin, at 6.30 a.m. and 7 p.m.
N.B.—Passengers from Dublin leave by Special Trains from
Westland-row at 6.15 a.m. and 6.45 p.m.
DUBLIN TO LIVERPOOL, with Cargo and Passengers,
Daily (Sunday excepted) about two hours before high water.
DUBLIN TO BELFAST every TUESDAY, returning every
THURSDAY.
15, EDEN-QUAY and NORTH-WALL, DUBLIN.

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ture, Models, Carving, &c., for
publication, contracted for.
PHOTOGRAPHS of Buildings, Domains,
&c., for sale.
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Ornamental Iron Work.
PHOTOGRAPHS of all such carefully and
punctually executed by
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THE ROYAL PHOTOGRAPHIC INSTITUTION,
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these magnificent premises, invites an inspection of artistic
works.

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BENSON, J. W., 99, Westbourne-grove.

BENSON, J. W., 164, Tottenham-court-road.

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City of London to H.R.H. PRINCE ALBERT.

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BENSON, J. W., MAKER of the CHRONOGRAPH by
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Watch, capped and jewelled, in all sizes.

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CLOCKS REPAIRED by ENGLISH, FRENCH, and GER-
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CANDELABRA in ORMOLU and BRONZE.

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SILVER PLATE, designed expressly for PRESENTATION.

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SPORTS.

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TABLES.

SILVER PLATE for INDIA.

SILVER PLATE for DINNERS à la Russe.

SILVER PLATE, FLOWER and FRUIT STANDS.

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Royal Charter from the liabilities of Partnership.
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Capital Stock.
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No. 5, COLLEGE-GREEN, DUBLIN.
By whom Bank Stock, Government Stock, and Debentures,
and all other public Securities, are daily bought, sold,
and transferred.

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had direct from the Office, or through any Bookseller.

The Dublin Builder.

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.. 4d.

JULY 1, 1866.

1st & 15th
OF EACH MONTH.

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Contracts.

CHARLES SHEIL'S ALMS HOUSES CHARITY.
TO CONTRACTORS AND OTHERS.

PERSONS desirous of Tendering for the Building of the proposed Alms Houses at Armagh may see the Plans and Specifications relating thereto at the Offices of Messrs Lanyon, Lynn and Lanyon, No. 64, Upper Sackville-street, Dublin, any day between the hours of Ten and Five o'clock from the 2nd till 4th July, 1866, and from 5th till 9th July, 1866, at their Offices, No. 2, Queen-street, Belfast. The Quantities will be supplied. Tenders to be lodged, prepaid, on or before Thursday, the 12th July, 1866, with
PLATO OULTON, Secretary.
62, Up Sackville-st., Dublin.

NOTICE TO BUILDERS.

PROPOSALS from Competent Builders, for the execution of certain Works connected with the Restoration of the Mansion at Springfield Castle, in the County Limerick, in accordance with a specification furnished by William Sydney Cox, Architect, will be received up to the 16th prox.

The specification can be seen daily (Sundays excepted) in the meantime, by intending Contractors, between the hours of 10 o'clock a.m., and 3 o'clock p.m., at Springfield Castle. Parties tendering must do so at their own expense. The lowest or any other tender will not necessarily be adopted.

Each tender to be enclosed under sealed cover, post paid, to
SIMON LITTLE, Esq.,
George-street, Wexford.
And to have "Tender for works at Springfield Castle" written on the back of cover.

23rd June, 1866.
Springfield Castle is within 10 miles of the Charleville and Ballyvaughan Stations, on the Great Southern Railway.

WAR DEPARTMENT CONTRACT.

NOTICE TO BUILDERS AND PAINTERS.

Office of Commanding Royal Engineer in Ireland,
Dublin Castle, 21st June, 1866.

TENDERS are required for Works to be done in External Painting a Portion of the Huts at
THE CURRAGH CAMP,
IN THE
CURRAGH DISTRICT.

Persons desiring to Tender for the above Work must leave their Names at the Office of the Commanding Royal Engineer in Ireland, Dublin Castle, or at the District Royal Engineer Office, Curragh Camp, on or before Friday, the 6th day of July, 1866, and pay the sum of 10s. 6d for the Bills of Quantities, which will be forwarded to each Party.

WAR DEPARTMENT CONTRACT.

NOTICE TO BUILDERS.

Office of Commanding Royal Engineer in Ireland,
Dublin Castle, 25th June, 1866.

TENDERS are required from Persons desirous of entering into Contracts (from the 15th August, 1866, to 31st March, 1867, inclusive), for the performance of such Artificers' Work as may be required at the under-mentioned Stations in the

CORK DISTRICT.

(As per Schedule A.)

CORK HARBOUR, VIZ:—

QUEENSTOWN, HAULBOWLINE ISLAND, ROCKY ISLAND, TOWERS, AND SPIKE ISLAND, WITH 10 PER CENT. IN ADDITION FOR CAMDEN AND CARLISLE FORTS.

Persons desirous of Tendering may obtain every Information up to Wednesday, the 11th July, inclusive, on application at the District Royal Engineer's Office, Cork, or the Division Royal Engineer Office, Spike Island; and printed Schedules of the Prices, with the Terms of Contract and Letter of Tender, may be obtained upon making a deposit of Ten Shillings for the same, which deposit will be repaid if the Schedules are returned uninjured, before two months.

The Letters of Tender to be sealed, and transmitted under cover to "The Director of Contracts, War Office, Pall Mall London, S.W.," so as to be received on or before Monday, the 16th July, 1866, and to be marked on the outside, "Tender for Builders' Work at Cork Harbour."

NOTICE TO BUILDERS

THE
ECCLESIASTICAL COMMISSIONERS
FOR IRELAND, on or before the 14th day of July, 1866, will receive Proposals for

WORKS TO BE EXECUTED AT THE CHURCHES OF

ANTRIM ..	Co. Antrim.
ARDGLASS ..	Co. Down.
AGHADIRG (Loughbrickland) ..	"
DONAGHMORE ..	"
ST. JOHN (Hillsboro') ..	"
KILKEEL ..	"
KILLOUGH ..	"
BALLYCALLAN ..	Co. Kilkenny.
DRUM (Belcarra) ..	Co. Mayo.

According to the Specifications, to be seen in the hands of the resident Ministers of the Parishes.

The lowest Proposal will not necessarily be accepted. Each Proposal to be forwarded sealed, prepaid, and addressed thus:—

"Proposal for the Church of
"The Ecclesiastical Commissioners for Ireland, Dublin."

NOTICE TO BUILDERS.

THE
ECCLESIASTICAL COMMISSIONERS
FOR IRELAND, on or before the 9th day of July, 1866, will receive Proposals for

REBUILDING THE CHURCH OF

TEMPLEBRADY .. Co. Cork.

AND FOR WORKS TO BE EXECUTED AT THE CHURCHES OF

CONNOR ..	Co. Antrim.
GARTRE ..	"
MAGHERAGALL ..	"
RALLCO ..	"
ENNISKEEN (Kingscourt) ..	Co. Cavan.
ANNABILT ..	Co. Down.
CLONDUFF (Hilltown) ..	"
DOWN (Cathedral) ..	"
DRUMBALLYTHONEY ..	"
KILLINCHY ..	"
DYSERT GALLAN (Ballinakill) ..	Queen's Co.

According to the Plans and Specifications, to be seen in the hands of the resident Ministers of the Parishes.

The lowest Proposal will not necessarily be accepted. Each Proposal to be forwarded sealed, prepaid, and addressed thus:—

"Proposal for the Church of
"The Ecclesiastical Commissioners for Ireland, Dublin"

BOARD OF PUBLIC WORKS.

NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be received up to the hour of 12 o'clock, noon, on the 13th of JULY, 1866, for BUILDING

A **BOAT-HOUSE** at the **COAST-GUARD STATION, PORTRUSH, COUNTY ANTRIM**, according to Plans and Specification to be seen on application to the Chief Officer at the Station.

Each Proposal is to be for a lump sum, and must be accompanied by a separate Detailed Estimate giving Quantities and Prices, and be endorsed "Tender for Boat-house, Portrush." Both Tender and Detailed Estimate should bear the Name and Address of the Proposer on the back.

Printed Forms for Tenders can be had at the Station. N.B.—Persons Tendering should send in Testimonials as to character and competency, unless previously known to the Board.

By Order of the Board,

EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 25th June, 1866.

* If this be not attended to, the Board cannot return detailed quantities to the unsuccessful parties.

BOARD OF PUBLIC WORKS.

NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be received up to the hour of 12 o'clock noon, on the 31st of JULY, 1866, for the ERECTION OF

A **NEW COAST-GUARD STATION** at **CASTLETOWNSEND, Co. Cork**, according to Plans and Specification to be seen at this Office, or at the Office of MARTIN MORRIS, Esq., 2, Smithgrove-terrace, Cork.

Each Proposal should be for a lump sum, and must be accompanied by a separate Detailed Estimate, giving Quantities and Prices, and be endorsed, "Tender for Castletownsend Coast Guard Station."

Both Tender and detailed Estimate should bear the Name and Address of the Proposer on the back.

Printed Forms for Tenders can be had at this Office, or from Mr. Morris.

N.B.—Persons tendering should send in testimonials as to their character and competency, unless previously known to the Board.

By Order of the Board,

EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 29th June 1866.

* If this be not attended to, the Board cannot return detailed quantities to the unsuccessful parties.

BOARD OF PUBLIC WORKS.

NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be received up to the hour of 12 o'clock noon, on the 17th of JULY, 1866, for BUILDING

A **BOAT-HOUSE** at the **COAST-GUARD STATION, BALLYSHANNON, County Donegal**, according to Plans and Specification to be seen at the Station.

Each Proposal should be for a lump sum, and must be accompanied by a separate Detailed Estimate, giving Quantities and Prices, and be endorsed "Tender for Boat-house, Ballyshannon."

Both Tender and detailed Estimate should bear the Name and Address of the Proposer on the back.

Printed Forms for Tenders can be had at the Station.

N.B.—Persons Tendering should send in Testimonials as to character and competency, unless previously known to the Board.

By order of the Board,

EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 29th June, 1866.

* If this be not attended to, the Board cannot return detailed quantities to the unsuccessful parties.

THE SMOKER'S BONBON immediately

and effectually removes the Taste and Smell of Tobacco from the Mouth and Breath, and renders Smoking agreeable and safe. It is very pleasant and wholesome. Prepared by a patent process, from the recipe of an eminent physician, by SCULLING & CO., Wholesale and Export Confectioners, Bethnal-green, London. One Shilling per box; post free, 14 stamps.—Sold by Chemists, Tobacconists, &c.

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LIST OF PRICES AT THE QUARRIES AND DEPOTS, ALSO COST FOR TRANSIT TO ANY PART OF

THE UNITED KINGDOM, FURNISHED, ON APPLICATION TO

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Corsham Down, Box Ground, Farleigh Down, and Combe Down Stone.

List of Prices at the Quarries and Depots, also Cost of Transit to all parts of the Kingdom, forwarded on application to the
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Manufacturing and General Ironmongers and Tool Warehouse—81, MIDDLE ABBEY-STREET.
Spade, Shovel, and Tool Works—CLONSKEAGH.

Agents for Perry's Patent Fire-proof Safes quality considered, they are the cheapest in the market. Builders are invited to inspect our Stock previous purchasing, at

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KITCHEN RANGES, with high pressure Boilers for Steaming or Bath purposes; Galvanized Iron Roofing, and Fencing Wire, best quality.

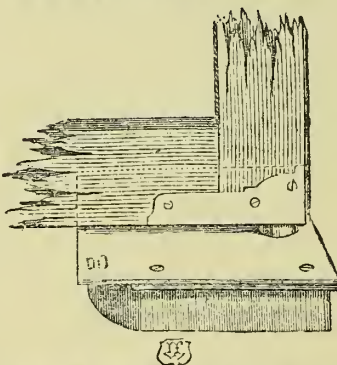
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That adorn our daily path."**HYAM'S SUMMER GRANVILLE OVER-COATS,**Light, Graceful, and Easy.
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Prices, 10s. 12s. 6d. 14s. 17s. 21s.**HYAM'S SUMMER TROUSERS AND VESTS, Alike,**In a great variety of Fancy Tweeds.
Prices, 15s. 18s. 6d. 20s. 25s. 30s.**CAUTION! CAUTION! CAUTION!**

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CLOTHIER, TAILOR, HATTER, & OUTFITTER,
30, DAME-STREET, DUBLIN.**PATENT SMOKE DRAWER.—**

T. GARDINER begs to inform his numerous patrons that he has now on show his NEW PATENT SMOKE DRAWER, hitherto unknown in this country, but extensively used in America, and has now been universally admitted to be the best and most efficacious cure for smoky chimneys.

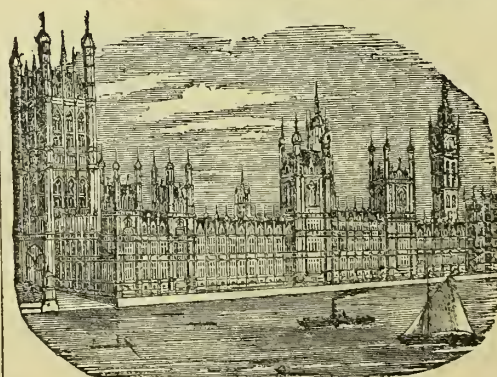
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THE SILICATE ZOPISSA

Is the ONLY SUCCESSFUL MATERIAL used upon the Stonework of the

NEW PALACE OF WESTMINSTER.

And the whole of the Iron Roofs are coated with the Granitic Composition. The Gilding is also laid upon this material.

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(Between Church-street and Smithfield.)

N.B.—Country Orders promptly attended to.

The Dublin Builder.

VOL. VIII.—No. 157.

THE INSTITUTE—FIRST ANNUAL EXCURSION.



HE Institute of Architects has reason to congratulate itself on the Session which was brought to such an agreeable close on Thursday last. The apathy of many members to the working of the Institute

has been more successfully combated than in any former year. There is no use in disguising the fact that the average attendance at the general meetings is small. Many members never take the trouble to appear amongst their brethren at all, except when some emergency arises, when they find the action and prestige of the Institute useful to forward their own views, and are utterly careless at all other times how the machinery of the Institute is kept alive. This is not as it should be, to say the least of it; but what shall we say of members of Council, who are nominated year after year to watch over the interests of the profession, selected from the respect due to their position and names, who, it is generally believed, absolutely do little or nothing, and leave any work that is to be done to a few energetic and conscientious individuals? We are aware that a strong feeling of dissatisfaction exists among the general body of the active members of the Institute on this point, and it is, no doubt, with a view of ascertaining the truth of what has been merely rumoured that a motion has been brought forward for a return of the attendance of members of the council, and the number of meetings held at which a genuine quorum was present.

The attendance throughout the year has been remarkably steady, and the papers read unprecedented in number and excellence. The students' class has certainly not been so successful as was anticipated, the attendance having proved small, but no reason exists why this subject should not be taken up with renewed vigor next year. The activity and energy of the Institute generally is increasing year by year, and, although the Session has nominally closed, we understand that well-attended private meetings of the Fellows are still being held, to debate many matters of the highest importance to the profession. The responsibilities, legal and otherwise, of architects, the want of a building act, of some reliable authority on building law, and the position and responsibilities of building surveyors in Ireland, are among the subjects earnestly and practically taken in hand.

But "all work and no play makes Jack a dull boy." Worn out by such arduous labours in such sultry weather, the Institute has condescended to unbend, and take a country excursion. A small party of those who could leave business started on Thursday morning last, from Kingsbridge Terminus, under the special care of Mr. Parke Neville, V.P., and Mr. James H. Owen; and with Mr. Astley in

the character of general caterer and providore, bound for Kilkenny. The day was delightfully fine; special carriages provided by the railway company at reduced fares; the company good-humoured; and the day's entertainment ample in quantity and highly interesting in character. The party were met at Kilkenny by one of the most indefatigable of Irish archaeologists, the Rev. James Graves, who had with him Mr. Prim, the editor of the *Kilkenny Moderator*, and Mr. Robertson, local antiquaries of no mean pretensions, who did the part of the *ciceroni* with unflagging zeal, and in the most thorough manner possible; not a stone but they had a sermon for if need be, not a date or founder's name was wanting, and no information which earnest love of archaeology, accurate scholarly research, and untiring good temper could yield was withheld.

St. John's Abbey Church, with its interesting lady chapel arcade, "the lantern of Ireland," was first visited. The long mullioned lights of the eastern end of the ruined choir exciting unqualified admiration. Thence to St. Francis' Abbey where the representative of the ancient Franciscans, Mr. Smithwick, who brews good ale from their famous springs, did not fail to do the honors of the place in a manner not a little appreciated by a score or so of thirsty souls fresh from a dusty railway drive, and with the thermometer at 95° or thereabouts. Proceeding to the ruins of the abbey they proved to be of the greatest interest, and especially to some members present who had not previously had any experience of the severe and peculiar type of Irish Franciscan and Cistercian churches. The tower (in rather a precarious condition) standing in the usual place over the junction of nave and choir in all its simplicity possesses an extraordinary charm. The condition of the desecrated church is such as to excite the liveliest anxiety on the part of the archaeologist. In the interior the great seven-light eastern window and all the others, the sedilia, founder's tomb, and every other opening are built up to form a tennis and ball-court, and ominous cracks, that should be looked to, are apparent. Mr. Graves assured his visitors that they hoped at some time to have the building in their hands, when it will meet with the attention it merits.

Thence to the Cathedral of St. Canice, a delightful surprise to everyone who was not previously acquainted with this remarkable and interesting building. The present edifice dates from the middle of the thirteenth century, but the walls contain many sculptured remains of a far more ancient building. The examples of Irish early ornament in such excellent preservation excited much attention. The visitors were received by the Dean, and it is needless to say, Mr. Graves as guide left nothing of interest unexhibited. Mr. Deane's restorations at present in progress were closely scrutinized. St. Canice would alone furnish materials for a dozen articles the length of this one, and would repay a visit of several days. The party, however, were obliged to hurry away and were warmly received at the Black Abbey by Father Skelly, the Prior of the Dominicans located there. The ancient geometric-traceried windows and Earley and Powells' beautiful high altar and reredos attracted most attention; but with a heavy sense of all that was yet to be done the visitors had to tear themselves almost from the arms of the hospitable Prior and hurry through some of the ancient houses and quaint courtyards, the relics of the former commercial greatness and wealth of Kilkenny traders.

Then Kilkenny Castle, with Mr. Deane's new picture gallery and staircase and a fine

collection of ancient portraits must be walked over at all events.

St. Mary's Church, with any number of interesting tombs, had to be looked at, and the valuable little museum of the Kilkenny Archaeological Society to be visited; a very tolerable dinner at the Club-house to be discussed, obligations to the worthy kind-hearted guides expressed, leave takings concluded, and the party to be mustered at the railway station at half-past six o'clock; a good day's work, all of which was happily accomplished, and the delighted and tired party returned to Dublin, determined, to a man, to seize the first opportunity of revisiting Kilkenny to study and sketch in a more leisurely way, and to make the annual excursion, so successful and enjoyable, this year, a standing institution of the Royal Institute of the Architects of Ireland.

NOTES IN SPAIN.

I ACCOMPANIED SENOR DOU CYPRIANO M——o (formerly Ministre des Travaux Publics to her Catholic Majesty), Horatio D. Young, Esq., the English Consul at Bilbao, and other gentlemen of note, to the summit of the highest peak of the Calabrian Pyrenees in the vicinity of Bilbao.

Beneath us lay the grounds where Espartero, in 1840 beat the rebellious Carlists—with the Bridge of Ossuna and Convento, now in ruins, as are most of the old convents over northern Spain. The government were short of the "sinews of war," and confiscated all the old religious houses in the country, and paid off their debt to Great Britain, and prosecuted successfully the Morocco war with the money they obtained for these institutions and lands.

Eclipse of Sun, July, 1860.—The "contact" (as astronomers call it) commenced at 2 p.m., on the — of July, 1860, and the total eclipse did not occur till about 4 o'clock, p.m. The horizon along the Bay of Biscaye seemed gradually overcast with a thick pall, stealing slowly along the canopy of heaven, till it assumed a general appearance of visible darkness—'twas then all nature felt lifeless. The ghastly and unearthly hues in the countenances of those present giving them the appearance of living corpses.

The neighbouring mountains of Santurce and Santander changed color from a lively green to a pale sickly sombre yellow: the waters of the bay presented the appearance of a sheet of molten lead, and the pueblos (hamlets) of Algorta and Santurce were, as if they were stricken with the plague—no sign of life or activity—no guttaring and waltzing—the bolero, for a time, was re-placed by the siesta.

The appearance of a portion of the king of day was during "totality" extraordinary. Round about the periphery of the moon there appeared protuberances, as if volcanoes or small mountains; several stars appeared quite recognisable, such as Regulus and Capella. Some of the party (who were astronomers) said they could distinguish Castor and Pollux, with the aid of the glass of my transit instrument.

The earth and its inhabitants presented the appearance that is given by the Roman historian during the unhallowed time of the death of the Redeemer, when as the Apostle says, "the sun was darkened from the sixth to the ninth hour;" save that then "the earth did quake, and the graves were opened, and many bodies of the saints which slept arose."

Bilbao is one of the oldest commercial sea-ports in the North of Spain; it is pleasantly situated on the river Nervion, about two leagues from the sea at Portugalete. The river is unavigable up to Bilbao for the steamers which trade to Bayonne and Vigo. There is a weekly communication also with London by sea.

I was engaged for six months taking soundings and surveying the Harbour, River, and Bay of Portugalete. I therefore had a good opportunity of studying the social and hospitable manners of the Basque inhabitants of proud Spain as well as enjoying the cooling breeze of the Biscayean coast, which is not to be had when one gets a couple of leagues inland.

Portugalete may be called the port of Bilbao; what Kingstown is to Dublin, and Queenstown to Cork, Portugalete is to Bilbao. The village is, I may say, altogether dependent on the seafarer for support, except, indeed, during the bathing season, when one meets with the black-eyed *Senoritas* from the sun-burnt south. Some come hither from famed Madrid, and Burgos, also from the Pyrenean cities of Pamplona and Vittoria.

The hotel accommodation here is very poor and mediocre. There are lots of lodging-houses, well kept but for a troublesome and lively insect; and a *café suizo*, at which there is an old dull billiard-table, at which some pretentious *gamins* repair to toss about

the balls and enjoy an ice—a great rarity in this roasting climate.

The *canaille* of this little harbour gain a scanty livelihood in the season, picking up oysters from the rocks round the southern shore of the bay, and along the Rio Nervion when the tide is out. In summer they go as far as Castro and Santander for baccalao (codfish) and lobsters.

I was an eye-witness to the sad effects of a gale of wind on this coast (from the N.W.) one afternoon during my stay in the neighbourhood. A sail boat seemed shifting over the fatal bar. She had lost her helm, at all events would or could not obey it. There were five or six men aboard of her at the time, and they were *all lost* within a stone's throw of the light-house. One poor fellow lashed himself to the mast until the frail craft was dashed to pieces on the rocks.

Next morning being professionally engaged at Santurce, about half-a-league outwards, one of my men, Antonio, drew my attention to a white object which appeared drifting with every heave of the tide. After a careful observation of the object through my transit, I found it to be a human being, held by a rope, or kept in that position by something it was attached to.

For days the same human object would attract my attention while along that coast, till at length it was broken up or driven to sea by another gale from the land, that took place a week after the boat's disaster.

It seems to me characteristic of the want of humanity in the Spanish character. Perhaps this poor fellow was the brother or husband of some one on shore at Santurce, who were eye-witnesses of the fact of his unhappy corpse, buffeted about by every wind from heaven, and lashed by every surge of the angry waves of the Bay of Biscaye.

The laws of the country help to cause this inhuman feeling—obliging any pueblo or municipal district to bury, at their *own* expense, the dead that may be washed ashore along their coasts.

The Spanish Government should have a lifeboat at the Harbour of Portugalete.

(To be continued.)

PRESERVATION OF OUR CORPORATE ARCHIVES.

THE Municipal Council having, on the recommendation of Committee No. 3, taken in consideration the imperative necessity that exists for the codifying and cataloguing of the valuable documents in their custody, called on J. T. Gilbert, Esq., F.S.A., to make a report thereon, and which was presented at a special meeting of the Council, on the 21st ult. Mr. Gilbert is well known as the author of "A History of Dublin," and with the proposed assistance of W. H. Hardinge, Esq., of the Record Office, the task will be faithfully accomplished. We do hope that the prayer of the memorial to the Lords of the Treasury will be granted, and the work set about forthwith. At the meeting above alluded to one member stated that he had been informed that documents of an important character, belonging to Dublin, had been sold in London; whilst another said that many valuable Irish historical documents were in foreign countries—some in Brussels, and more in the King's Library, France.

MR. GILBERT'S REPORT.

"In compliance with your desire, as expressed in the Town Clerk's letter of 11th June, I have carefully inspected your Corporation muniments, antecedent to the year 1800, and have to report that these very valuable documents are at present in a most confused and unarranged state. Some are entirely obliterated, from the carelessness with which they were treated in former times. Several documents of high value are long missing, but I shall fortunately be able to supply accurate copies of them from authentic sources. Of those still extant in the possession of your Corporation there *exists neither catalogue nor inventory*. Consequently it more city muniments should disappear you could neither know nor prove documentarily the precise nature of such losses. I would class the muniments now in your charge as follows: Class 1—Original charters and grants from the Crown of England to the City of Dublin, commencing in 1171–2. Class 2—Original contemporary vellum rolls of the Acts of the Council of the City, from the middle of the fifteenth century. Class 3—Vellum and paper books, containing copies and entries of various important matters, in Mediæval Latin and Anglo-Norman, connected with the affairs, laws and rights of the city; original rentals and accounts signed by the mayors and city officers; in this class I include the "Chain Book" and the "Doomsday Book," two invaluable vellum volumes, portions of each of which

were written about six hundred years ago. Class 4—Miscellaneous detached original documents, ranging from the fourteenth century, connected with the affairs and rights of Dublin. Class 5—A quantity of leases and agreements of various dates. The suggestions which I desire to make to your committee are as follows:—1. That all your documents should be stamped as the property of the Corporation of Dublin; that each charter or detached ancient instrument should be repaired when broken, and carefully placed between leaves of strong white paper, with a cover of bookbinders' cloth, and arranged chronologically, and according to class in portfolios, similar to those used by the French Government for the preservation of their public and municipal archives. 2. That each roll should also be repaired and placed in a zinc case, lettered externally. 3. That translations and fair transcripts should be made of the more ancient, obscure, fragile, and decaying documents, and bound into volumes, and indexed. 4. That a catalogue should be at once prepared of all the books and documents now in your charge, dating earlier than 1800, with tables of their contents and references to their locations in the muniment room, so that each document or volume could be at once produced when wanted. 5. That application be made through the city members and other members of Parliament, and the President of the Royal Irish Academy to the Treasury in London, to authorize the publication of the more important of the muniments of the Dublin Guildhall, prior to the reign of Henry VIII., under the grant annually voted by the House of Commons, for the printing and editing of the works styled "Chronicles and Memorials of Great Britain and Ireland." The Treasury have already, at the public cost, published the muniments of the London Guildhall, extending to four large volumes. They have also, out of the public funds, published volumes on Scotland; on local institutions in Gloucester, Yorkshire, and Canterbury; as well as works on records in continental repositories. I may observe that the muniments of the metropolis of Ireland cannot be considered as of a mere local character. They exhibit authentic details of the state of education, commerce, science, and law, in past times in Ireland; and also elucidate the relations of the Anglo-Irish with the natives, as well as with England and the Continent. Much of their hitherto unknown contents are also of the highest importance as illustrating the general and social history of Great Britain. Should you approve of this report, I am prepared to superintend the carrying out of all the foregoing suggestions, as well as to translate and edit the documents above referred to. I desire to add, that W. H. Hardinge, Esq., keeper of the largest body of the Irish public records (those in our Custom House buildings), and, pre-eminently, the most experienced record officer in Ireland, kindly visited and inspected your muniments with me on yesterday. Mr. Hardinge fully approves of my suggestions. He has authorized me to say that he will afford his co-operation towards the proper execution of so important a national work as that recommended in this report. In conclusion, I beg to impress on your committee that serious injuries may be occasioned unless the greatest caution be observed in dealing with your ancient muniments. Their arrangement and repairs should be executed in a muniment room, under the personal supervision of an experienced archivist."—J. T. GILBERT.

CHESTER TOWN HALL.

THE *Cheshire Observer* says:—"A serious strike occurred at the Town Hall on Wednesday. The men on strike are the stonemasons and wallers, and their reason for doing so is said to be the following enormously important one. The clerk of the works, having reason to complain of the work in a portion of the front wall, requested the foreman to remove the mason engaged upon it to an interior wall, where such careful workmanship was not required. This perhaps was contrary to the regulations of the 'union,' and the mason refused to obey the foreman's order. A dispute arose, the 'banker mason' decided to support their brother of the trowel, demanded the appointment of a different clerk of the works, and finally went on strike. The strike of the masons necessitated the wallers leaving off, and on Thursday affairs at the Town Hall were at a standstill. If this be a correct account the masons have most unquestionably assumed an untenable position. The clerk of works is appointed to guard the interests not only of the architect but of the town, and it would never do that he should be rendered a nonentity, and prevented from criticising and complaining of work which in his opinion is unsatisfactory. Nor could the building trade be carried on if the masons, and not the contractors, chose where they should work. If the above version is in any respect incorrect we shall be happy to afford an explanation, and under any circumstances we must regret that a strike has occurred."

We learn from another source that this unreasonable strike has proved a failure, the executive of the stonemasons' union at Bradford having declined to support it, pronouncing the proceeding "illegal." Some national jealousy between Irish and English workmen appears to have existed, but we feel no apprehension but that the firmness and good sense of the clerk of works, whom we have known for a long period, will prevail in the long run.—ED. D. B.

CLAYTON'S FIRE ESCAPE.

THIS escape, the invention of Mr. William Clayton, of this city, is constructed on the telescopic principle, and can be applied to any building up to the height of 55 feet; when closed the ladders are but 20 feet. It consists of three separate ladders, of double the ordinary width, with a rail down the centre of each, which forms the guide for the wire cradle to slide on. The lower ladder rests on a framework, the axle of the wheel of which also forms a winch with handles at each side for the purpose of raising the ladders with a light chain. The side of the ladders are trussed with hoop iron, which enables them to be made of very light scantlings. The cradle is intended for the reception of disabled persons or children; it traverses the entire of the ladders in less than half a minute. This escape can be worked with half the number of men that is required to work the present ones; and it is not to be laid to the burning house to raise the ladders, as they can be extended in the middle of the street, and then laid against the house. An iron folding lever is attached to the lower frame, which affords the conductor perfect control over the movement of the machine. This escape, owing to its lightness, is easily moved.

EXPORTATION OF GRANITE.

THE district of Newry is famed for its splendid granite quarries all the world over, and the exportation of stone of this description has for many years formed an important element in the wealth of the town. While curious speculators indulge in theories as to the number of centuries which the coal fields of England will endure at the present rate of consumption, we need have no timid apprehension as to our stock of granite. It will continue to supply generation after generation with the best materials for houses, roads, and other solid works, enriching the capitalists who devote money and skill to the development of the quarries, and affording remunerative employment to the labouring classes, and also to skilled workmen with the chisel and hammer. Irishmen have been too much accustomed to rely upon agriculture for the means of subsistence while mines of wealth lie under their feet, and by granite quarries alone fortunes are to be acquired. We greatly honour those enterprising men who have so far endeavoured, and with an encouraging degree of success, to bring this natural staple article—if such we may be allowed to term it—into public notice. They have, in no limited sense of the words, been benefactors to the locality, and the energy which they have displayed is assuredly worthy of extensive imitation. What are brick-and-mortar houses in comparison with houses constructed of granite?—houses that look as if they were designed to remain until the crack of doom. Travellers from Newry are often pleasantly reminded of home by masonry in England in which this sort of stone is used. It is seen in various quarters—always the same, "good and good alike," as the tea of a famous importer is described. The quantity of granite forwarded annually from our local ports is sufficiently indicative of the value attached to it in the sister country, and, we believe, we may safely anticipate that the excellence of the stone will continue to bring it into universal use.—*Newry Telegraph*.

An arrangement of iron shutters (says the *Builder*) has been patented by Messrs. Bunnett, and Co., which affords thorough ventilation and shade, combined with the perfect security of a revolving iron shutter. The laths are made in iron and wood, flat, rounded, or curvilinear, as required; but, instead of the hinges being fastened by rivets or screws on the back of laths, as in the ordinary revolving shutters, the hinges form continuous bands from the roller, on which the shutter coils to the bottom, and by which the shutter is made to lower. The top edge of each lath is connected at intervals by means of flaps to the continuous bands of hinges, leaving the lower edge of the lath free to be raised or lowered as may be required. Each lath is fastened to the one immediately above it by the means of points working on a centre fitter to the end of each lath at its lower edge. By an easy contrivance, the grooves in which the shutters ascend and descend are thrown open, and allow the shutter to take the shape of a Venetian blind. The increased cost is not great so that they will doubtless come into use, at any rate, in first-class buildings.

SOME REMARKS ON RECENT PLASTER WORK.*

HAVING been called on by you, Mr. Chairman, to read a paper, I cannot exactly say I am in a position to comply, as I have not any paper prepared. I have been asked to make some remarks on the plaster-work of Mr. Murray's important work, the new Provincial Bank, and do so with pleasure.

There is a well-known story told of the Prince Regent, in the days when George III. was king, when men swathed their throats in fearful and wonderful bandages yclept cravats—how that prince of British dandies in particular went to visit his rival and instructor in the arts of dress, the prince of snobs, Beau Brummel. "George," as Brummel (the son of Lord Norths Butler) was wont to call his royal acquaintance, met the Beau's confidential "gentleman" descending the staircase with a bundle of slightly crumpled white neckcloths on his arm and condescended to enquire what these were? "Some of our failures" was the grandiloquent response of the important functionary, who, of course, followed his master in the matter of impudence. The story has lost its flavor in these years it has been kept, but it serves my purpose to illustrate my position in making these remarks to-night. If you want to know the meaning of these few plaster casts I have brought down with me I beg to say, that, taking advantage of the absence to-night of the architect of the new Provincial Bank, I take the liberty to assume a position very analogous to that of Beau Brummel's valet, and assure this very respectable company that these are some of *our*—failures shall I call them. My apology for referring at all to an isolated work as an illustration of the present state of plaster work must be that I use it as a case with which I am most familiar. It is not done with the slightest attempt to insinuate that as a work of Art this building is any better than its neighbours.

You are all familiar with the history of the plasterer's art in Dublin; how of old when the city of Dublin was 'vastly genteel' it was one of our greatest glories. There is enough of it left in such ceilings as the Chapels of the Royal and Rotunda Hospitals, and many time-forgotten works to bear witness for us that contemporary art elsewhere produced nothing like it. From the position of high art, which the plasterer's calling then occupied, we have seen it slowly decline, with the traditions of its great adepts, the Italians or other foreigners who first introduced it, growing fainter as each generation of plasterers followed in their father's footsteps, until we in our day have seen—I hope as a thing of the past—its lowest degradation as an exponent of art in its highest or any sense. We cannot say that the technical skill in the manipulation of their material has ever been wanting among the renowned plasterers of Dublin, but at a recent period a modeller worthy of the name was unknown among us; we are all familiar with the touchstones of perfection so often submitted—"So-and-so can model his vine well, and has a first-rate egg-and-dart, and cannot be beat at a honeysuckle." This was the kind of character we used to get of a modeller, as if the cardinal virtues of plasterers' art began and ended here. Now that exquisite refinement of Grecian art, the Echinus more commonly known as the "egg-and-dart," and the Anthemion, or honeysuckle, and that lovely plant the vine are good things in their way, but all that is lovely and

imitable in creation does not end there, and in process of time those well-worn types have wandered so far from the paths of original virtue that their best friends can scarcely recognize them. There is a loud demand for reformation and for something new, and at the outset we encounter the great difficulty that if we want to model something new in the way of enrichment we cannot command—I state it deliberately, quite prepared for contradiction—modellers with a sufficient knowledge of foliage and design to do all we require. I will tell you hereafter the substitute that has been adopted at the Provincial Bank; we could not descend to the indignity of *importing* modellers; as you are probably aware, most of you, of the character of the contractor, Mr. John Nolan, you will know how certain he is to have the very best means and appliances to carry out his work that money and energy can command, and, like the free-horn Briton, to be prepared to die but never submit to *foreign intervention*, within his territory at least. In this work at the Provincial Bank, I may safely say, that Mr. Murray has not been required to spare any expense to have the work executed in the very best possible way, and an attempt has been honestly made to do so, whether successfully or not it is not for me to say, but for you when you visit it. Mr. Nolan has had the good fortune to have in his employment a plasterer of very great skill, and what is better still, an enthusiast in his trade in his way, who takes such an honest pride in his work that no amount of trouble is trouble to him. This practical workman—Mr. Saunders is his name—is a modeller—better than most—a superior one as times go—but as might very naturally be expected without a very intricate knowledge of foliage or high-art modelling generally. I need hardly say, I, who have taken an active share in these details, do not either, even if I was competent or had leisure to model enrichments. So we have had recourse to the expedient of modelling enrichments of a simple character, adopting pleasing forms of natural types of plants, trefoil, ivy, passion flower, and such sparkling forms, and depending on the pleasing contrasts of shadow which a judicious disposition of these must insure to form effective enrichments. Here are some of them. None of them sufficiently good to pass under the critical eye of my friend Mr. Earley for instance, as specimens of studies of foliage, but some of them, at the great height at which they are placed, effective enough, and some few, I admit, dead failures. So much for the art view of this plastering. I would now wish to direct your attention to the practical manipulation of it. The interior of the great cash office is very elaborate. Caen stone and Aberdeen granite are freely used, but the remainder of the work is carried out by the plasterer in a specially excellent manner, in materials specimens of which I now submit. The plain surfaces and molded work generally are finished in a coat composed of equal parts of Keene's cement and finely ground Caen stone dust. This more economical finish has, after due consideration, been substituted for polished Parian, as provided by the specification—a costly finish in my opinion, not worth the expense. The groundwork throughout is for the most part Portland cement, one part to four or five of sharp sand. In cases where molded work occurs in short lengths the groundwork or core is run on the bench in coarse Keene's cement (specimen exhibited) and fixed *in situ* afterwards. The enrichments are cast for the most part in a material which I recommend for specifications—super-

fine plaster—a beautiful material, very little more costly than common "alabaster" and well worth its additional cost. On the table you will find a specimen of the raw material, and also of the ground Caen stone used, in three degrees of fineness (gauged by wire sieves), and of the two qualities of Keene's cement. I should recommend you to visit this building, and study for yourselves what *can* be produced in the way of plaster by first-rate materials and tradesmanlike use of them. One word more as to the enrichments. You will observe the most prominent decoration of the ceiling to be the bold foliage and fruit in the main ribs. It is effective, though I say it, who perhaps should not say it. I should confess the mode in which this was accomplished. Throughout the progress of the work I held to the opinion that the execution of the rich work required for this was something beyond the capabilities of our modeller, and told him so. Nothing daunted, however, he set about producing a specimen, and in rather a peculiar way, when the usual processes of art modelling are considered. I observed him cast a number of miscellaneous objects, such as pomegranates, apples, leaves, flowers, &c., without apparently any definite idea as to how they were to be applied. These were applied separately to the panels destined for them, arranged according to taste, as a lady would dispose flowers in a bouquet, and I, in spite of my own theories, have had to confess it satisfactory in a high degree. Such a process is not high art, but is at least a proof of what *may* be done by a compromise between ancient hand-modelled enrichment and modern cast work. Portions of enrichments cast separately, cleaned with the tool, and fixed separately, leaf by leaf, and flower by flower, will produce plaster work of a higher and better class than we have been doing of late years, if, as it seems inevitable, we can seldom in these days of costly labour, return to that highest and best practice which it is a fashionable delusion to suppose is a lost art. Believe me, it is no such thing. If you could afford to pay for high art in plaster work there would be no difficulty in finding skilful hands to execute it (applause).

Mr. Charles Geoghegan concurred with the views ably stated by Mr. Drew in his practical paper. The difficulties of procuring competent modellers was very great. He referred to the successful plaster work of the Royal Bank, which was modelled by a resident plasterer—Brady by name. While he stated this to shew that good modelling was not unknown in Dublin, he must admit that it was exceptional. He had been obliged to ask the Directors of the Royal Bank for time when this one modeller was absent from his work, as he was not unfrequently; he found the other workmen could not imitate or copy his work, much less go on when he left off.

Mr. Carroll also concurred—Plaster work was not to be considered as an art work of secondary importance or dignity. The common necessities of construction demanded its use in places where stone could never be used. Consequently it stood on the same footing as art work in what was usually considered more worthy material. Mr. Drew deserved the thanks of the Institute for directing attention to such a subject, and he had much pleasure in proposing a vote of thanks to him for his interesting remarks.

The resolution was seconded by Mr. Geoghegan, and passed unanimously.

* By Thomas Drew, Fellow, at the Ordinary Meeting of the Royal Institute of the Architects of Ireland, May 21st, 1866.

THE SUPPLY OF FUEL IN IRELAND.*

In the midst of conflicting opinions as to the quantity of unconsumed coal in the coal fields of the sister countries, it is gratifying to have laid before us some reliable information as to the probable quantities of fuel we can reckon on in our own coal fields and bog lands. The author of the pamphlet before us (the title of which is given below) tells us that—

"Coal has been found in seventeen counties of Ireland, and in each of the four provinces. The names of the counties are:—Antrim, Fermanagh, Leitrim, Queen's County, Donegal, Monaghan, Roscommon, Kilkenny, Tyrone, Cavan, Westmeath, Carlow, Tipperary, Clare, Limerick, Kerry, and Cork. Sir Richard Griffith, who was the first to publish a general description of the Irish coal-fields, grouped the areas occupied by the coal deposits into four great fields, which he named after the four provinces into which the country is divided. The coal found in Leinster and Munster burns without flame, and receives the names of anthracite, culm, and stone coal; that found in Ulster and Connaught burns, for the greater part, with flame, and is consequently known as blazing coal. The Leinster coal-field occupies portions of the Queen's County, and the counties of Carlow, Kilkenny, and Tipperary, but it is divided into three distinct and detached portions by the limestone rock upon which the coal beds rest. The Munster coal district is the most extensive in Ireland. It occupies large portions of the counties of Clare, Limerick, Kerry and Cork. The Connaught coal-field occupies portions of the counties of Roscommon, Leitrim, and Sligo. The Ulster coal district is of small extent. It occupies portions of Antrim, Monaghan, and Tyrone. There is also a small patch of coal in the County of Cavan, which is remarkable from the fact that it occurs in rocks of the Silurian age, and not in the true coal measures, or Carboniferous group common to the rest of Ireland. The sum of the areas of all these coal-fields, or, in other words, the extent of country beneath which coal spreads, is 1,881,600 acres."

After devoting a few pages in describing the localities in which some of the coal-fields are situated, the qualities of the coal raised, and the various purposes to which they are suitable, Mr. O'Hara proceeds:—

"From this rapid sketch of the character and extent of the Irish coal-fields, we learn that there are 73 collieries at present in Ireland, of which number 31 are in the Leinster district; 29 in Munster; 7 in Connaught; and 6 in the Ulster coal-fields. But of the 73 collieries thus distributed over Ireland, only 46 are at present working. The quantity of coal raised by the Irish collieries is about 120,000 tons annually. In 1863 the exact quantity was 127,570 tons. Although the quantity of coal raised in Ireland is small when compared with the productiveness of the English and Scotch collieries, yet the number of collieries in Ireland is steadily increasing; for in 1853 there were but 19 at work, and 1856 there were 22 in operation. Small quantities of anthracite and pyritous kelves are shipped occasionally from the ports of Dublin, Cork, Dundalk, and Belfast, to foreign countries."

The bog lands in Ireland are stated to comprise about 2,000,000 acres, the money value of which (according to a calculation which we will not presume to question) is put down at £280,000,000! "Large as this sum is," our author tells us, "it might be greatly increased if the same means were adopted in Ireland to utilize peat that are successfully prosecuted in other countries."

The pamphlet under notice is valuable to those who desire to be thoroughly acquainted with the resources of our country, a subject which has been frequently brought under notice in this journal. The maps showing the coal-fields and bog-lands, and also the sections of some of the collieries in Ireland will be prized by the reader.

With one or two extracts more we must close, regretting that we could not transfer to our columns the entire of Mr. O'Hara's paper. At page sixteen he says:—

"Fuel is one of the primary elements of industry and comfort, and its abundance or scarcity will regulate the extent to which manufactures can be conducted. It is therefore considered one of the great necessities of life, whether as an article of domestic economy or of national industry. The high price in Ireland of fuel suited to steam-boilers and to many industrial processes has hitherto been supposed to be one of the greatest obstacles to the extension of manufactures."

* "Report on the Supply of Fuel in Ireland: an inquiry into the character and extent of the Irish Coal Fields, Peat Marshes, &c." By H. O'Hara, C.E. Dublin: McGlashan and Gill.

At Glasgow, Leeds, and many other great seats of industry, coals are delivered at the factories for about 5s or 6s. per ton, whereas at Dublin and its neighbourhood, the coals cannot be delivered, even at contract rates, under 18s. or 14s. per ton. This disparity in price affects the interests of a Dublin manufacturer in a manner that will be at once obvious, if we contrast the yearly cost of fuel to a Glasgow manufacturer who consumes 3,000 tons of coal annually, with the cost to a manufacturer at Dublin who uses the same quantity. The Dublin man pays £2,100 annually for his coal, but the man at Glasgow obtains it for £900, and this difference of £1,200 a year holds out to the manufacturer a premium for settling at Glasgow in preference to Dublin. The question is often asked, "Why are not the coal mines of Ireland more extensively worked, and their produce brought into competition with the imported coals?" The answer is, that the Irish collieries are worked to as great an extent as local circumstances will admit of, and in their neighbourhood coal may be obtained in as much abundance, and almost as cheaply, as in the most favoured districts of England, Wales, or Scotland. The subsequent increase in the price of the fuel is owing to the cost of the carriage; and whether the system of transit from the collieries to the places of consumption be by road, water, or railway, the additional cost will be influenced by the traffic arrangements of the respective districts."

Hear the conclusions at which Mr. O'Hara arrives:—

"1. That there is a great scarcity of timber in Ireland, and that this scarcity should be overcome by increasing the number of plantations.

"2. That the quantity of peat in Ireland is enormous, but that the manner of preparing it for fuel, as practised by the peasantry, is extremely rude and expensive.

"3. That the coal mines of Ireland are far from being exhausted; that they are worked to a very large extent; and from their present condition, there is every prospect that increased supplies will be obtained from them.

"4. That the proximity of the eastern coast of Ireland to the British ports from whence immense quantities of coal are shipped, and the lowness of freight between the British and Irish ports, offer facilities for supplying Ireland with British coals, and competing at present with the produce of the Irish collieries.

"5. That the trade in coals between Great Britain and Ireland is now free from legislative restrictions, and that the competition between the produce of the two countries is of a purely commercial character.

"6. That in the immediate neighbourhood of many of the Irish collieries coal and culm are extremely cheap and abundant; in the neighbourhood of the bogs turf is likewise abundant; and at the principal Irish seaports every description of British coal is regularly delivered by fleets of vessels engaged in the trade.

"7. That a considerable impetus would be given to the consumption of Irish coal, if the improved machinery and systems of transit applied in England were adopted in Ireland."

THE NEW RECORD BUILDINGS, INNS-QUAY.

A BUILDING by far the most important in point of size and cost, of a public nature, that has been erected in Dublin for some years, is the General Law Record Depository, which occupies a distinct portion of the site contiguous to the Landed Estates Court Offices. This building is now in course of completion, and it is estimated will have cost about £40,000 when completed. It is 220 ft. long by 100 ft. wide, in form rectangular, and is composed of two nearly detached blocks; one containing the Registry Office, an office for public inquiry, for such as desire search to be made, and convenient offices for record keeper, registrar, and clerks, on each of three floors, with caretaker's apartments on the basement, the other block, containing the Depository proper, consists of a basement, a ground-floor, and five galleries, divided into compartments, and filled with shelving for the storing of the deeds.

The public offices, which measure 40 ft. by 28 ft., is approached through a grand staircase, somewhat massive in construction, entered from a Roman Doric portico. The public office will be finished in a substantial manner, with an amount of tasteful decoration, and will be filled with counters suitable to its object. The ceiling is coved and panelled, and the space between the coves is formed into a lantern of five bays, separated by elliptical arched ribs, sprung from ornamental corbels. These ribs carry the skylight, from which the public office is lighted. Around this apartment, and communicating with it by doors behind the counter, are private offices for the officials, who have business most directly with the Public Office and Depository.

The Depository is entered through a short passage from the Public Office. The space within the walls measures 140 ft. by 85 ft., and the galleries, five in number, together with the roof and their supports, are constructed chiefly of wrought iron. The ground-floor is flagged over the arches of the basement.

Transversely the building is divided into three nearly equal spaces. The centre, being open from the ground up, is used for lighting from the roof and end, for galleries of communication, and for a staircase. The side divisions are each again divided longitudinally into ten compartments, each fitted with 114 ft. lineal of shelving. A conception may be formed of the accommodation afforded, from the computation that the superficial area of shelving will amount to 2½ acres statute. The shelves will be formed of timber, it being deemed sufficiently fireproof for the purpose of storing papers, as paper itself is known to be a deterrent, under certain circumstances, to the spread of fire. The construction throughout the Repository is calculated to be fireproof.

The floors of the galleries are formed of open iron-work. The galleries of communication are supported by ornamental cast-iron brackets projected from the columns, and are protected by a light railing, with oak handrail, carried around the entire area at each floor. At intervals are desks, for the accommodation of the record-keepers and clerks.

The roof is formed of slates, except to the middle division, which is glazed, on stout rolled iron bars, the whole sustained by wrought-iron trussed principals, springing from columns which are carried up in direct series from the ground-floor. The general character of the internal fittings has been borrowed from the fittings of the book-rooms adjoining the reading-rooms in the British Museum.

The walls throughout are faced with granite ashlar, the public department having a more ornate character bestowed on its openings than has the Depository. The design is Classic, and is rather chaste than decorative; the character is Roman, the porch having a Doric order. The walls to the ground-floor are rusticated, and a string is carried round the level of the porch cornice. The windows of the first-floor are pedimented and surrounded with a double-faced architrave; those of the second or upper floor being square, and surrounded with an architrave. The whole is crowned with an entablature and blocking. Plain, yet elegant, chimneys spring from the roof.

The Depository is different in treatment, yet in full accordance, and especially to be commended for the truthfulness with which it tells its story. The windows are large, being designed for the admission of abundance of light.

The new work was designed by Mr. James H. Owen, architect to the Commissioners of Public Works, assisted by Mr. E. Trevor Owen.—*Builder*.

NEW CHURCH AT FERRYBANK.

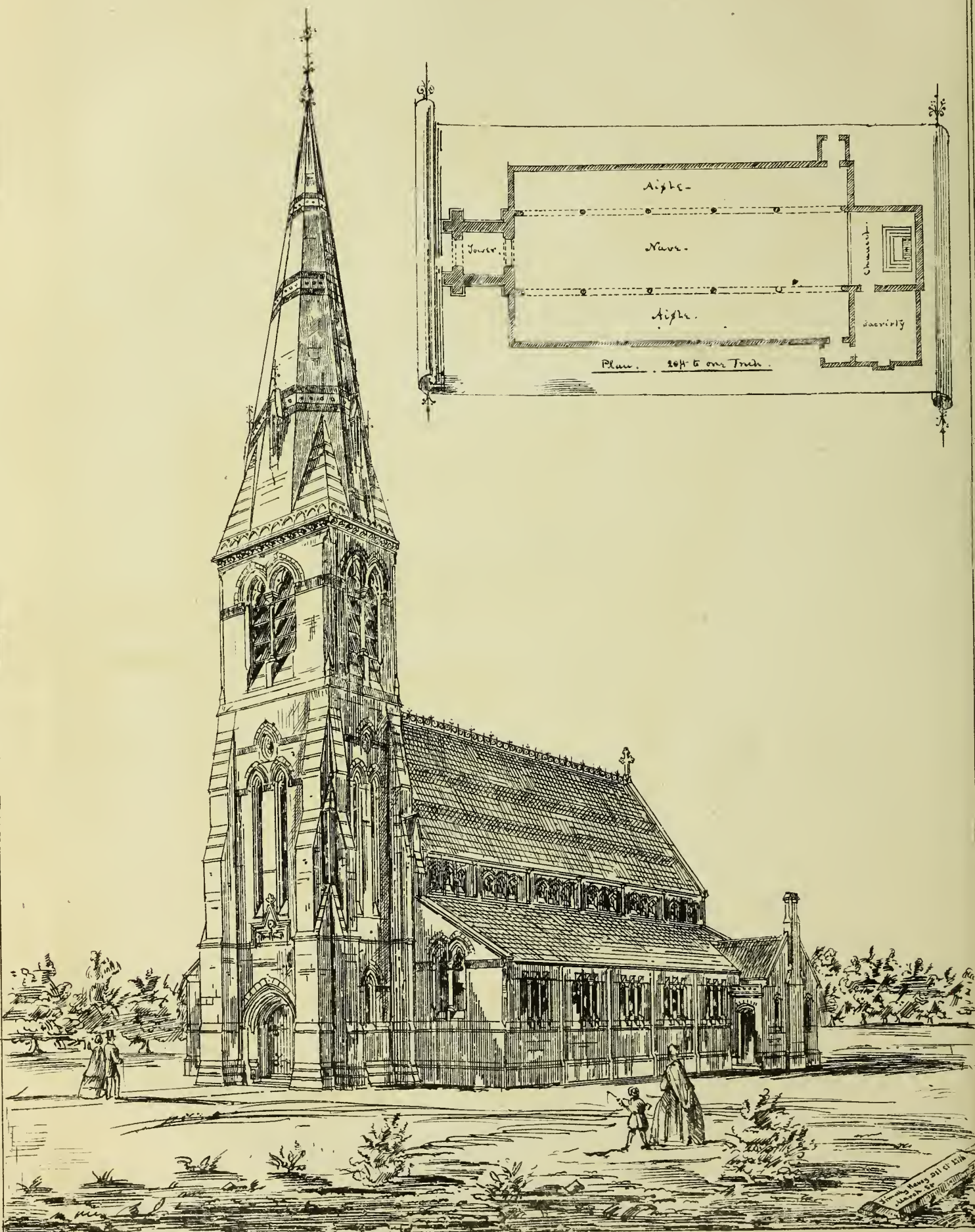
ONE of our illustrations is a sketch of the New R. C. Church at Ferrybank, Co. Waterford. Only the tower (which is to be built at the sole expense of Pierce Marcus Barron, Esq.) is being erected at present; it is, however, intended to remove the present church, and substitute for it the one shown in the view. The tower walls have been carried down to form the family vault of the Barron family. The architects are Messrs. Pugin and Ashlin, of St. Stephen's-green and Ely-place, Dublin; and the contractor is Mr. James Scanlan, of Elgin-road, Dublin.

NEW CHAPEL, CLONAKILTY.

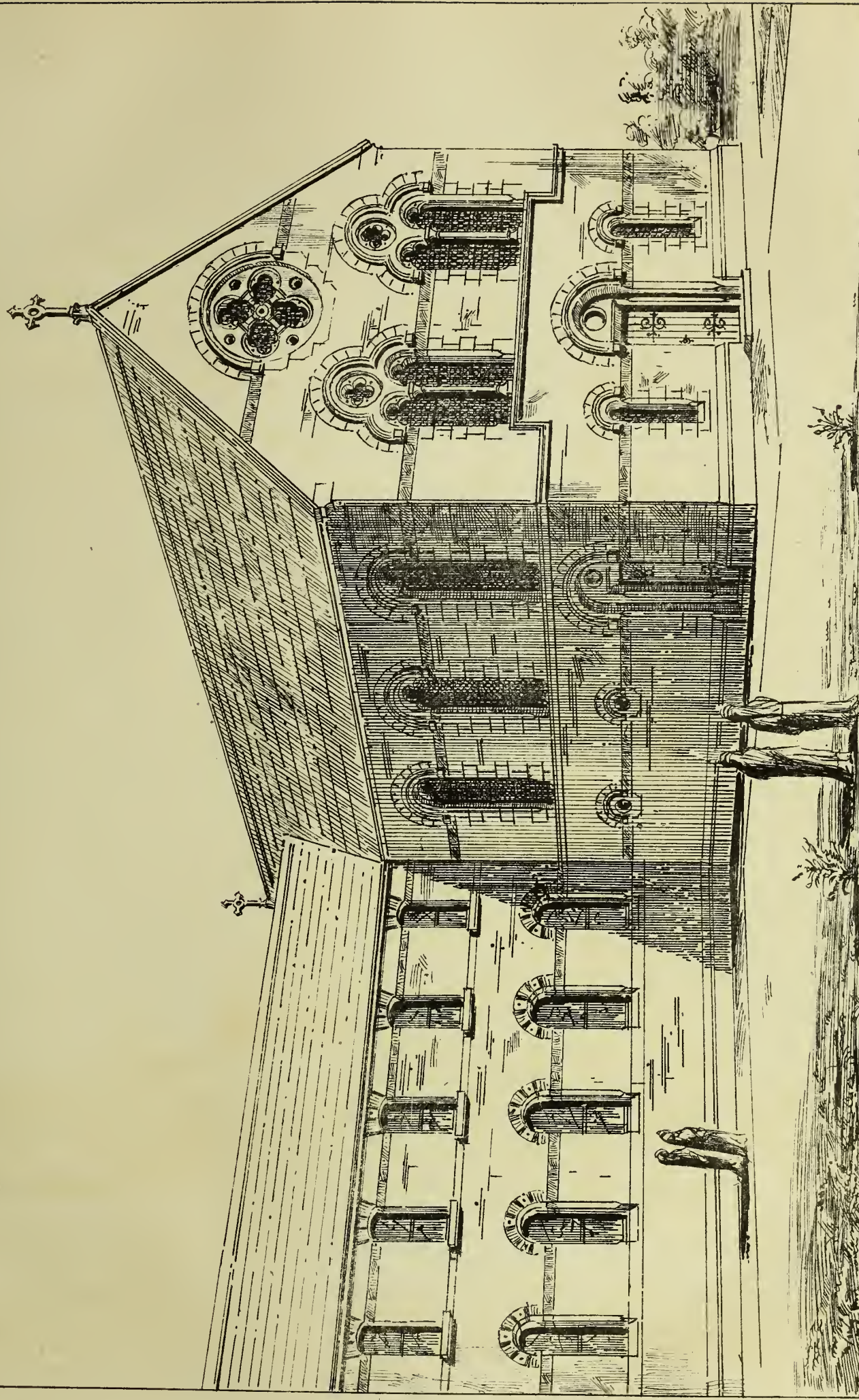
OUR second illustration is a view of the new chapel, which is being built for the SS. of Mercy, at the convent, Clonakilty. It is attached to the convent, and, as will be seen, a Lombardic style of treatment has been adopted by the architects, Pugin and Ashlin, as being in more harmony with the existing building. The contractor is Mr. P. Scannell of Cork.

When the Limerick Harbour Commissioners met to open the tenders for removing the Cock Rock obstruction in the Shannon, it was found that though advertised for some weeks in the local papers, not a single tender had been sent in. The sum mentioned in the specification was considered insufficient, especially as the Harbour Board wisely refused to allow the debris of the rock to be cast into the river, but insisted it should be thrown at the river side. The board then agreed that the Board of Works should be acquainted with this result, and requested to make arrangements for the removal of the obstruction. The Limerick Board were of opinion that if the Board of Works undertook it, or allowed them to do it, it could be done as economically as by a contractor, and if begun at once it would be finished this season.

THE LIBRARY
OF THE
UNIVERSITY OF MICHIGAN



NEW CHURCH AT FERRY BANK WATERFORD. Pugin & Ashlin Architects.



THE LIBRARY
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ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

THE last meeting of the Session was held at the rooms of the Institute on Thursday, June 21st. Among the Fellows present were—Park Neville, Esq., C.E., V.P., in the chair; James H. Owen, hon. sec.; W. J. Welland; Thomas Drew; J. Rawson Carroll; C. Geoghegan; J. Lanyon; E. T. Owen, &c.

The minutes of the last meeting were read and confirmed.

Messrs. Carroll and Lanyon were appointed scrutineers of the ballot for Mr. James Healy, Assistant Master in the School of Art, Kildare-street, as an Associate, who was afterwards duly elected.

The recommendation paper of Mr. T. N. Deane as a Fellow was read. Mr. Deane had a long list of proposers and seconders, and the notice of admission to the Institute was received with applause.

Mr. DREW then announced that Mr. McCurdy, Mr. Carroll, and himself, having been appointed by the Council to examine and report on the designs sent in by students for the President's Prize, had carefully done so, and reported to the Council. He had great pleasure in announcing, that in accordance with their report the prize had been awarded to Mr. S. P. Close, a pupil of Messrs. Lanyon, Lynn and Lanyon, for a very creditable design. He was directed by the Council to communicate the result to the meeting and to make public the report of the judges, as follows:—

In presenting our report on the designs submitted for the President's Prize, we have only to regret that the task allotted to us has not been a more troublesome one. At the same time while we would have hoped that more than four Students of the Institute would have had the energy and industry to compete, we must acknowledge that we feel some satisfaction at the standard of excellence which the designs sent in have, on the whole, attained, and we cannot but pronounce them creditable to the body of students from which they emanate.

We are of opinion that the competitors stand in order of merit as follows:—

- 1st. Mr. S. P. Close.
- 2nd. Mr. R. S. Miller.
- 3rd. Mr. R. S. Swan.
- 4th. Mr. R. Stirling.

The design which we have placed first in order of merit, we can commend as exhibiting a general excellence of arrangement in planning—of compactness and economy—and a fair knowledge of detail of the style (Tudor) in which it is designed. We would offer the following criticisms on points of detail for the consideration and future guidance of the author. For a villa to cost £2,000 we would suggest that there is a certain amount of extravagance in the amount of ground-floor area allocated to porches, hall, and staircase. The reception-rooms on this floor are well and conveniently disposed; a ladies' store is in inconvenient proximity to the gentlemen's water-closet. On the upper floor there is considerable ingenuity displayed in the economy of planning, but it must be regarded as a defect that this is gained at the sacrifice of all direct lighting to the lobbies, staircases, and corridors except from skylights. A majority of the bedroom doors open on fire places—an inconvenient arrangement which might have been avoided in most cases without a sacrifice of the convenience of the bed space. The roof construction, in one place at least, is on the weak side, and, in some such points as the agreement between plans and elevations in the matter of position of windows, &c., there is a little want of care. The mullioned lights are rather narrow. These must be regarded as criticisms worth the author's consideration, although secondary in importance in considering the general merit of the design. The conditions as to cubing are conscientiously complied with, as we find the total cubic content rather under than over the author's computation.

Design No. 2, also exhibits a considerable share of merit both in planning and the general preparation of the drawings. As in the former case, the author evinces a fair mastery of the details of his adopted style. We note the following defects:—

In the basement—The scullery in an inconvenient position; no access to it either externally or internally but through the kitchen; no servants' water-closet; no store-room or cook's pantry. On the ground-floor, the doors to library, breakfast-room, and small drawing-room badly placed, and an excessive amount of reception-room accommodation for a £2,000 ordinary villa. On the upper floor two dressing-rooms (or small bed-rooms) want fireplaces. The doors in some cases are inconveniently situated where there are fireplaces. There is some waste of

space in the excessive height over the lavatory and water-closet entered off the half-pace, and an extravagance of timber in the roof. We find that in this design the cubical content has not been satisfactorily computed. In the first place we are of opinion that in estimating the height of a building "to the wall-plate" the point where the wall line meets the foot of the common rafter is to be accepted as the meaning. We are also of opinion that the instruction "measuring from the ground line," however general, could not in common sense be supposed to give a competitor an opportunity of introducing a whole basement story underneath an arbitrary ground line. Such basement not included in computing the cubical content, but the accommodation provided in which is an integral portion of the complete plan. We, therefore, are obliged to assume the "ground line" in such a case as this to be the level of the areas under the lower floors, and, observing also that Mr. Miller has omitted to include the extra cubical content in his tower, we find that this design contains—under the terms of the instructions—about 117,520 cubic-feet, which at sixpence per cubic-foot would amount to £2,938. The amount of accommodation provided at this extra cost is not appreciably in excess of that provided by No. 1 within the conditions.

Design No. 3 deserves praise for the neatness with which the plans are got up and presented. With regard to the design externally we must confess that we think the author would have more judiciously adopted a style of architecture with which he was more conversant, or, if selecting a Gothic style, have founded his work on Gothic of purer detail and better type. Generally, with regard to this plan we would say that in a detached villa of this character and cost it is not desirable to provide such a large amount of the necessary accommodation in an attic or second floor, and in a basement. On the ground floor there is a want of a ladies' store-room; the door of the dining-room is unfortunately placed, and the amount of space allocated to the staircase is excessive. In the basement the central hall or passage is defectively lighted.

Design No. 4 is not destitute of merit, but presents grave faults in economy and general convenience on which it is unnecessary for us to enter.

We have entered thus, candidly, into any defects which these plans exhibit, not with a view of detracting from the credit due to the competitors who have had one of the most difficult of architectural problems submitted to them for solution, and have acquitted themselves excellently well, but with a hope that the remarks which we offer for the consideration of the Council of the Institute may, when made public, be taken as kindly and well-meant, if not useful, advice to our younger brethren the competitors, and the students of the Institute.

In accordance, therefore, with the views which we have expressed, we have great pleasure in recommending the design of Mr. Samuel Patrick Close as worthy of being adjudged the President's Prize.

J. RAWSON CARROLL, F.R.I.A.I.
JOHN MCCURDY, F.R.I.A.I.
THOMAS DREW, F.R.I.A.I.

June 21st, 1866.

To the Council.

Mr. Drew also announced that the sub-committee appointed to draw up the circular on competitions had agreed unanimously on the form and substance of that document, which he begged to hand to the hon. sec. The circular, which it is proposed to forward to the promoters of all competitions when first beard of, is as follows:—

Sir,—With reference to I am instructed, as Honorary Secretary to the Royal Institute of the Architects of Ireland, to offer for your consideration the views of the Royal Institute on the subject.

The chief desiderata in every competition must necessarily be—

First.—Clear and precise conditions and instructions for the guidance of competitors.

Second.—A strictly honorable adherence to such conditions and instructions both by the promoters and competitors.

Third.—The offer of remuneration sufficient to induce men of talent and experience to compete.

Lastly.—Provision for a competent and impartial adjudication of such remuneration.

The conditions and instructions should lay down—

A.—Either the exact accommodation required and the approximate outlay intended, leaving it to the competitors to send a definite estimate, or the exact outlay intended, and the approximate accommodation required, leaving it to the competitors to decide the amount of accommodation they can provide for that outlay. If both the accommodation and outlay are fixed, the estimate is manifestly the work of the promoters and not of the competitors.

B.—If the promoters entertain any predilection in favor of any particular style, it should be stated.

C.—The drawings to be submitted should be specified. The following are usually requisite:—a plan of each floor, two sections, elevations of the several fronts, and perspective drawings and details at the option of the competitors.

D.—A plan of the site, to the same or half the scale that the designs are required to be, should be furnished to competitors, together with sections, if the ground is not level. If the required designs are for the alteration or enlargement of an existing building, plans, elevations and sections of the such parts as are expected to work in with the new buildings should be furnished.

E.—All drawings should be required to a uniform scale, which should be carefully chosen, so as not to prove inconvenient. In ordinary cases one-eighth of an inch to a foot, or one-tenth of an inch to a foot is recommended.

F.—It is not generally advisable to lay down restrictions with reference to coloring. Should, however, your instructions specify the use of monochrome, you should be aware that the greatest difficulty is practically found to exist in enforcing a *bona fide* and unquestionable compliance with such a condition.

G.—It should be made a distinct condition, supposing our suggestion to have been followed out, that unless a tender is received from a competent builder to execute the work for a sum not to exceed 10 per cent. above the architect's estimate, the said design shall be rejected and the next one in order of merit taken and acted on as before.

The promoters should distinctly state that any competitor violating the conditions will be excluded from the competition and his plans at once returned to him—not merely that certain individual drawings will be excluded, as before exclusion it may accomplish the designer's object by creating an exalted impression of the design.

It is manifest that when architects are asked to compete, the remuneration to the successful competitor should be more than he would receive were he commissioned to carry out the work without a competition; and also that there should be some slight acknowledgment to the next one or two designs, about whose merit as compared with the one adopted there may have been a difference of opinion.

It is, therefore, clear that there should be a premium for the best design in addition to the commission for carrying out the work, and that there should be moderate second and third premiums.

But above all, the question, an answer to which decides men of ability and experience whether to compete or not, is:—will the author of the selected design be employed to carry out his design at the usual rate of remuneration?

No matter how fair the premium, it barely remunerates the receiver of it for the expense and trouble he has been at in preparing the drawings, irrespective of the skill required for designing the building; and is, therefore, by itself no premium, but merely moderate pay to one competitor only out of a large number, for a part of the work done. Competitors look to the commission as their real remuneration, and consider the "premium," as the word implies, an *extra* payment for the extra trouble and anxiety of competing.

It should, therefore, be an invariable condition that the author of the selected design should be employed to carry it out at the usual rate of remuneration, should he be a person of sufficient experience to warrant the promoters in entrusting the work to him.

The proper award of the premiums is the most difficult question connected with competitions; but its paramount importance demands that an attempt should be made to grapple with it.

In most cases it is important to secure the services of one or two architects of admitted experience, honor, and discretion, to report on the drawings, and to aid the committee in coming to a decision.

Should the above-mentioned suggestions be adopted, and strictly adhered to, the Council of the Royal Institute will have great pleasure in recommending this competition to the notice of its members.

On the motion of Mr. Welland, seconded by Mr. Lanyon, the circular was ordered to be printed and circulated among the members.

The Chairman then called on Mr. Drew to read his paper on "Recent Plaster Work," which with the discussion thereon, is to be found elsewhere.

Mr. James H. Owen then proceeded to read "Some observations on the Recent Disastrous Fire in Westmoreland-street." His remarks were more especially directed to the means of rendering timber-work less rapidly inflammable—illustrating the theories by the experience of the late fire; and he concluded by forcibly pointing out the evil under which Dublin and the principal towns of Ireland suffered from the want of an intelligible, comprehensive, and effective Building Act.

The chairman said he had already taken some pre-

liminary steps to that effect by bringing the matter before the Corporation.

Moved by Mr. Carroll, seconded by Mr. Lanyon—resolved—that the question of the necessity of having a building act for Dublin similar to that which exists in London and large provincial towns in England, be referred to council for consideration.

Moved by Mr. Welland, seconded by Mr. Geoghegan—resolved—that the secretary be directed, when issuing notices of election of the officers for the ensuing year, to annex a list of the present council and the number of attendances of each member at the council meetings, and the number of meetings held during the year.

Mr. J. H. Owen brought forward the idea of an excursion to some place where interesting remains exist, now at the close of the session. He also asked that the subscriptions to the Paris Exhibition fund should be handed in, to allow the money to be forwarded to the Institute of British Architects without delay.

An excursion to Kilkenny, to take place on Coronation day, June 28th, was successfully organized. The meeting then adjourned.

THE RECENT FIRE IN DUBLIN.

An inquiry into the circumstances attending the late calamitous fire in this city, has been brought to a close, after having occupied the attention of the coroner and a special jury for fifteen days. Our readers need not be reminded that on the night of the melancholy occurrence six human beings were sacrificed in less than half an hour from the first alarm of fire, and that too in presence of hundreds who thronged the street between nine and ten o'clock on a summer's evening.

The coroner and jury having decided that they had sufficient evidence before them, the inquiry was closed.

The coroner then addressed the jury as follows:—

You have had a long and arduous inquiry, but not longer than the circumstances demanded. It was due to the friends of the parties who perished by this terrible calamity—it was due to the safety of the lives of yourselves and fellow-citizens, and it was loudly demanded by the public, that a full and ample investigation should be had into all the circumstances connected with this unfortunate calamity. I think anyone who has watched your proceedings as closely as I have must come to the conclusion that there was no part of the evidence that escaped your particular attention. It would not, therefore, be right in me to go through the evidence; for I would only occupy your time unnecessarily. The minutes of the evidence will be handed to you if you wish. There is one thing I wish to call your attention to, and that is the exceedingly short space of time which it took to reduce two first-class houses from a state of apparent security to absolute ruin. The evidence of two of the Brigade men who first got an intimation of the fire, fixes the time about eight minutes past nine o'clock, and the evidence of the gentleman whom I examined to-day confirms that with great accuracy. He was coming into town from the country on a smart-trotting horse, and he looked at the Post-Office clock to ascertain the exact time it took him to come three miles. It had passed the figure ten minutes past nine o'clock at that time, and the escape had moved as far as Princes-street. You can in this way estimate the time the escape arrived at the fire. The next thing is the time the Lord Mayor arrived. That was twenty-seven minutes past nine o'clock, and at that time the roof of the house had fallen in, and there was no possibility of any person being able to exist in the premises. That you must bear in mind in measuring what efforts were made whether there was unnecessary delay, and what more could have been done under the circumstances. It may be said that the people in the house, as well as the people outside, depended too much on the escapes. I think the evidence of Mr. Hodges would lead you to think that when these unfortunate people made an effort to escape by the ladder to the roof, the flames drove them into the front room. This is the only way you can account for their possessing this step-ladder which was there for the purpose of escape, and which was often made use of for amusement. I do not think there is any think more I can refer to. In finding your verdict you must find it upon things actually proved to you; but if you come to express an opinion on your belief, such as that the escapes ought to be under other control, or that they are under proper control at present, or any such opinion as that, you cannot embody in your verdict unless it be proved to you. But when you form your verdict on facts it is quite competent for you to draw up any opinion you please,

attach it to your verdict, and sign your names to it. That is the only boundary that I lay out for you—that all things proved or ascertained you put in your verdict; and all opinion or belief you cannot put in that verdict, but you can add it to it and give the sanction of your names. If any one dissents to that opinion I cannot take any protest from him. The fact of his dissenting is a sufficient protest.

After three hours' deliberation the jury brought in the following verdict:—

"We find that the death of Anthony James Strahan, and the other five individuals was caused by a fire in the houses Nos. 19 and 20 Westmoreland-street, on the evening of Thursday, the 7th of June instant, the origin of which fire we have no evidence to enable us to determine."

In addition to the verdict, the opinions of the jury, as concurred in by a majority, were expressed thus:—

1. "We believe said persons could have been saved, and there was full time to save them, had the fire-escapes been manned by experienced men, or had the police been called to the assistance of the men who brought the two fire-escapes to the houses. We also believe, had there been no fire-escapes at the premises on the occasion that the six persons could have been saved, either by ropes from the parapets or by opening up the roofs. There was no such effort made to save the people by the Fire Brigade, although they had ropes, crowbars, and jumping-sheets attached to the fire-escapes."

2. "We are of opinion that had such information and directions been afforded to the citizens of Dublin as are given by the Society for Protection of Life from Fire in London, that efforts would have been made by the sufferers at the late fire, and also by the public looking on, to make some means of escape other than the ladders, and that it was the duty of the Waterworks Committee or Fire Brigade to give the public such information."

3. "That we believe that the present system adopted by the Fire Brigade and its fire-escapes for the preservation of life and property is insufficient, and that it should be brought under the special supervision of the Board of Works, the Metropolitan Police, or other experienced parties."

4. "That we consider the escapes and their present construction very imperfect for the saving of life from fire, and that we strongly recommend some alteration, or the adoption of the telescopic escape, which we consider a great improvement to those at present in use."

5. "We are of opinion, from the evidence which came before us, that the Fire Brigade, who are for the saving of life and property in our city, and the arduous duty and danger to which they are often exposed, are insufficiently paid, and that the Board of Works and insurance companies should contribute to their support, as is the practice in London."

THE HEALTH OF DUBLIN.

(From the Registrar General's Weekly Return.)

In the Dublin Registration District (which extends over an area of 9,745 statute acres, and had, by the Census of 1861, a population of 314,409), the births registered during the week ending June 23rd, amounted to 166—89 boys and 77 girls. The number in the corresponding week of last year was 197. The deaths registered during the week were 142—74 males and 68 females. In the corresponding week of last year the number was 113. Six deaths resulted from fever. A boy, aged 6 years, died in the Meath Hospital from small-pox. Three deaths from whooping cough were registered. Diarrhoea caused 4 deaths. Nine deaths were caused by convulsions. Nineteen deaths were attributed to bronchitis. Pneumonia, or inflammation of the lungs, caused 2 deaths. Twenty-five deaths resulted from phthisis or pulmonary consumption. Apoplexy proved fatal in 3 instances, and paralysis in 4. Six deaths were the result of heart disease. A girl, aged 3 years and six months, died in Lower Baggot-street; the certified cause of death was "cancer of eye ball." Three accidental deaths were registered—one that of a man whose skull was fractured by a fall into the hold of a steamer; a button burnisher, aged 66, who died of erysipelas, the result of a wound; and a child, aged 13 months, who died from an injury of the spine. The deaths registered in No. 1, North City District (Summer-hill), afford an annual ratio of 19 in every 1,000 of the population—the Mater Misericordiae Hospital is situated in this District; in No. 2, North City District (Coleraine-street), which includes the Rotundo Lying-in Hospital and Jervis-street Hospital, the deaths registered amounted to 12 per 1,000; and in No. 3, North City (Blackhall-street), to 25 per 1,000;—the North Dublin Union Workhouse, the Hardwicke, Richmond, and Whitworth Hospitals, and the Richmond District Lunatic Asylum, are situated in this District. In No. 1, South City District (Meath-street), which includes the South Dublin Union Workhouse, the Cork-street

Fever Hospital, and Steevens' Hospital, the deaths registered afford an annual ratio of 69 per 1,000; in No. 2, South City District (High-street), the ratio was 18 per 1,000; in No. 3, South City District (Peter-street), which includes the Coombe Lying-in Hospital, and the Meath, the Adelaide, and Mercer's Hospitals, it was 26 per 1,000; and in No. 4, South City District (Grand Canal-street), in which Sir Patrick Dun's and St. Vincent's Hospitals are situated, it was 16 per 1,000. In the suburban district of Rathmines the annual ratio was 23 per 1,000; in Donnybrook it was 11—the City of Dublin Hospital and the Hospital for Incurables are situated in this district; in Blackrock it was 15, and in Kingstown 9 per 1,000 of the population by the census in 1861. Fifty-eight of the deaths registered during the week occurred in hospitals and other public institutions; of this number 5 took place in the North Dublin and 33 in the South Dublin Union Workhouse.

At the Observatory of the Ordnance Survey Office, Phoenix Park, the mean height of the barometer during the week was 29.807 inches. The highest daily mean reading (30.108) occurred on Saturday, and the lowest (29.442) on Monday. The mean temperature during the week was 55.8° (in the corresponding week of 1865 it was 62.8°); the lowest daily mean (48.5°) occurred on Tuesday, and the highest (67.0°) on Friday. The temperature was highest on Saturday, when the thermometer registered 70.4°, and was lowest on Wednesday, the mercury having fallen to 39.0°. The mean of the dry bulb for the week was 57.2°; and of the wet bulb 53.6°. The mean humidity of the air was .808—complete saturation being represented by 1.0. The rainfall during the week measured 1.643 of an inch.

STATISTICAL SOCIETY.

At a recent meeting of this society (Sir Robert Kane, V.P., in the chair), Mr. Alexander M'Donnell read a paper entitled "Notes on the French System of Railways." He stated that at the beginning of last year there were 8,130 miles of railway open in France. These had been constructed at a cost to the companies of £221,200,000, and to the State of £38,800,000. The State had given a guarantee to the companies of 4.65 per cent. on a large proportion of this capital, and it was arranged that eventually the railways should become the property of the State. An interesting discussion took place on the subject on the paper.

Professor Houston read a paper on the extension of the field for the employment of women. The professor gave an interesting detail of the working of the Queen's Institute for the Education and Employment of Women. A discussion ensued, in which Dr. Hancock, Mr. J. Haughton, Mr. Mowatt, Mr. Thompson, Mr. A. H. Bagot, the chairman, &c., took part.

The officers of the society for the ensuing year were elected.

L A W.

COURT OF COMMON PLEAS.

Murphy v. Forster.—Plaintiff, a builder, contracted with defendant to build a villa for a sum of £600. It was stated that under a provision in the contract, defendant served plaintiff with a ten days' notice, and entered upon the works, took them up before they were completed, and took possession of the plant. These acts were done on the ground that plaintiff had committed unnecessary delay in the execution of the work. Plaintiff's case was that at the time the works were so taken up, there was £176 due to him over and above the sums paid. For defendant it was averred that plaintiff had been paid the value of the work done. Verdict for defendant.

O'Neill v. O'Brien.—Action to recover £125 for building work executed by plaintiff for defendant at a house in South Anne-street. Portion of plaintiff's claim was for balance of amount of work done under contract, and the remaining portion was for extra work alleged to have been ordered by defendant after the contract had been entered into. On the part of defendant it was alleged that only £38 remained due to the plaintiff, and, against this sum defendant set off £80, being amount of penalties incurred by plaintiff under contract, for delay in executing the work. Plaintiff replied that any delay that did occur was caused by the extra work ordered by defendant. The jury found for plaintiff £100.

COURT OF QUEEN'S BENCH.

Manning v. the Gresham Hotel Company.—Action to recover damages laid at £500 for an alleged deprivation of ancient light. The plaintiff is Mr. Joseph Manning, of Upper Sackville-street, and his premises adjoin the company's. He complains that

the Company, by the erection of buildings in the rear of the hotel, have taken away the light of one of his warehouses. The defence is a demurrer of the cause of action.

The jury having viewed the premises, gave a verdict for defendants.

The Gresham Hotel Company v. Manning.—Cross action by the hotel company to recover damages for deprivation of light to their premises by the buildings erected by defendant.

Mr. Palles, Q.C., stated the case on behalf of the Company.

M. Gresham, Esq., deposed to the injuries done to some of the rooms at the rear of the hotel by a new building on portion of respondent's premises. He established "The Gresham Hotel" in 1817; sold it about a year since to the present company.

Mr. Sidney, Q.C., stated defendant's case, in support of which defendant and Mr. P. D. Hardy, the landlord of the premises, and other witnesses, were examined.

At the close of the evidence on both sides, Mr. J. A. Byrne addressed the jury for defendant.

Mr. Butt, Q.C., replied for the plaintiffs, and in the course of his address said his clients would not ask for damages if defendant consented to remove any obstruction that materially interfered with the admission of light to the rooms in question.

The Chief Justice having charged the jury, they found for plaintiffs, with 6d. costs.

Upon the application of Mr. Manning's counsel, execution was stayed in both cases, he lodging £160 to meet costs.

The City of Dublin Steam Packet Company v. Costello.—Action by the City of Dublin Steam Packet Company to recover £1,000 from the National Bank for the carriage of goods. It appeared that in September last the National Bank of Ireland, in London, forwarded by the London and North Western Railway Company £100,000 in gold, consigned to the National Bank in Dublin. Two officers of the bank came over in charge of the gold, for the carriage of which as "bullion" the bank paid in London £15 10s. for a through ticket to Dublin. The Bank, in 1865, had been informed by the steam packet company that a charge of 20s. per cent. would be made on gold carried by vessels, unless the bank indemnified the company against the consequence of any loss of the gold *in transitu*. To this letter there was no reply from the bank, and the Company relied on the communication as notice of the terms on which gold would be carried, and an assent to these terms by the bank. The bank denied they were liable for any charge whatever to the company, having purchased the through ticket for the conveyance of gold in London. After the case had been opened, Justice Fitzgerald said it was a case in which there might be a settlement. He was of opinion that the bank were liable to some charge to the steam packet company. Plaintiffs to accept a verdict for £50 and costs, and the jury found accordingly.

IRISH BUILDING NEWS.

ESTABLISHED CHURCH.

A meeting has been held by the congregation of St. John's Chapel of Ease, Belfast, to consider the injury which the church will suffer by the Belfast Central Railway. The church stands near the bank of the river, and it will be surrounded, and the approach to it entirely cut off by railway sheds, through which the congregation would have to pass. The question was discussed whether to petition against the bill, or induce the company to take down and re-erect the church on a more advantageous site, the cost of which would be about £2,000.

A new bell has been erected in St. Patrick's Church, Ballymena.

GENERAL.

Ten new cooking-houses are to be built at the Curragh Camp.

Additions and alterations are to be made in the Ledwich School of Medicine, Peter-street. Mr. D. C. Ferguson, architect.

Among the more important works executed or commenced in Dublin under the Board of Works are the following:—The new range of stabling at the Royal Hospital, Kilmalmain, for the service of the Commander of the Forces and his household, has been completed. A new separate chapel for the Protestant inmates of Dundrum Criminal Lunatic Asylum has been commenced. The extensive additions which have been in progress for some years at the Constabulary Depot, Phoenix Park, have recently been finished, and given over to the Constabulary Force. The new Record Depository at the Four Courts is far advanced towards completion; the fittings for this building

are now being put up. A tender has been accepted for the erection of the Central Police Courts on a site immediately adjoining the Four Courts, and the works will be carried out at once. The buildings of the new Bankruptcy Court and Offices, now being erected at the Four Courts, are being proceeded with. Arrangements have been made for providing increased accommodation for the Commissioners of Charitable Bequests—a more commodious house than at present occupied by them has been procured in Kildare-place.

TENDERS REQUIRED.

By the Grand Jury of the county Clare for erecting an iron superstructure on the bridge at Ennis, to the first day of fiscal business at the Summer Assizes.

By Messrs. Boyd and Batt, architects, for the erection of a Wesleyan church at Antrim, to 6th instant.

For keeping the interior of Kilmalmain Gaol in repair for twelve months, to 5th inst.

By the Royal Engineers for external painting of a portion of the huts at the Curragh Camp, to 6th instant.

By the Board of Works for building a boat-house at Portrush Coast-guard Station, to 13th inst.

MONUMENTS, STATUES, ETC.

Three fine statues, from the studio of Mr. Joseph Kirk, R.H.A., have been placed on the architrave of St. Paul's Roman Catholic Church, Arran-quay, and contribute very much to the exterior appearance of this fine building. The statue of St. Paul (patron of the church) occupies the apex, that of St. Patrick the angle of the architrave on the right, and the opposite angle is filled by the statue of St. Peter. The figures are of colossal size, and are conceived in the spirit of high symbolic art. St. Paul, holding the sword in his left hand, looks upwards steadfastly; St. Patrick wears the mitre and the robes associated with his traditional likeness, and St. Peter is an equally striking representation of the apostle. The statues are of Portland stone, and are creditable to the sculptor. The cost has been defrayed by subscription.

At a meeting of the friends and admirers of the late Earl of Carlisle on the 15th ult. the following resolution was passed:—"That in order to perpetuate in Ireland the memory of the late Earl of Carlisle K.G., distinguished as he was by an earnest desire to promote the welfare of this country, by long public services, many endearing qualities, and social virtues, a memorial be erected in or near the metropolis, by a general subscription throughout Ireland." The sum of £420 was handed in before the meeting separated.

MISCELLANEOUS.

At the late examination, held at South Kensington Museum by Her Majesty's Inspectors, of the drawings and paintings by students of the Cork School of Art were successful, and obtained prizes:—Miss Fanny Thorpe, painting flowers in water-colour and figure in oil, from nature, both retained for National competition; Miss Kate Thorpe, group shaded in chalk, from nature, N.C., special prize; Mrs. Henry Hill, designs and ornament, painted in oil, N.C.; Miss Maria J. Thorpe, animals, painted in oil, N.C.; Miss Elizabeth Banks, shading figure in chalk, from cast, and anatomical drawing, N.C.; Miss Elizabeth White, design for carpet, N.C.; Miss Anne Baker, painting figure, and group of birds in oil, from nature, N.C.; Miss Christina Williamson, shading group in chalk, from nature; Arthur Hill, outline drawing, from cast, in pen and ink, N.C., special prize; Charles Leslie, shading antique head, from the cast, N.C.; W. W. McCarty, architectural drawing, N.C., special prize; Donald McCarthy, shading, from the cast; John Coombes, shading egg plant, from the cast, N.C., special prize; William Bennie, outline, from flat; Luke Franklin, do.; George Phillips, outline of pilasters, from cast, honorable mention.

A new submarine telegraph cable has been successfully laid by the Electric and International Telegraph Company between Whitehead, county Antrim, and Portpatrick on the opposite Scotch coast, a distance of twenty-six miles. The cable weighed fifteen tons to the mile, and is the heaviest of its length ever laid.

A new mode of smuggling foreign tobacco has been discovered by the custom-house authorities at Paris. Some large blocks of stone, weighing about a hundred weight, having arrived from Switzerland, it was found on inspection that they were hollow, and that they were stuffed full of cigars of the finest brands.

The National Life-boat Institution has just sent a fine 32 feet ten-oared life-boat to Skerries, in lieu of the boat previously on that station. Last week the institution also forwarded a new boat to Wexford. The cost of that life-boat was collected amongst gentlemen connected with the Civil Service of the Crown, through the exertions of Messrs. James A. Dow and Malcolm Goldsmith, of the Admiralty. The institution has now twenty-eight life-boats on the Irish coast, on which it has expended about £14,000.

TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

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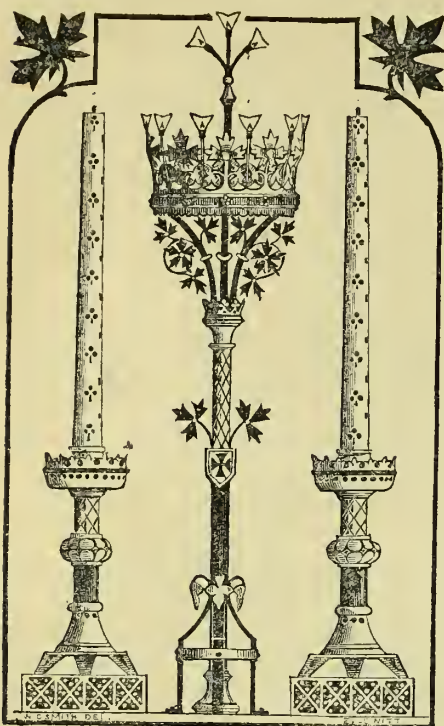
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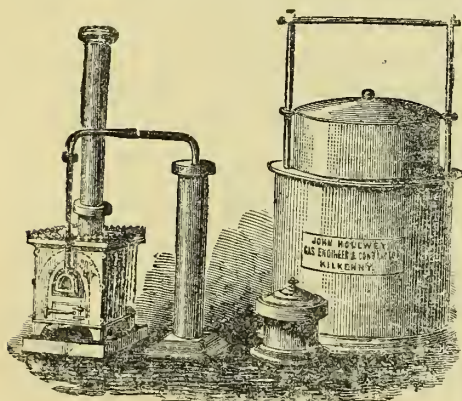
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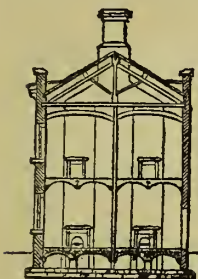
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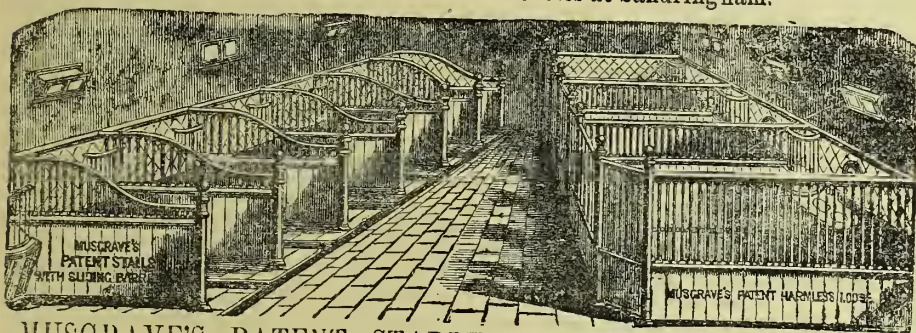
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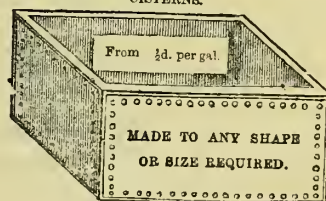
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From WILLIAM TITE, Esq., M.P. for Bath, and Architect of the Royal Exchange, London. House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have used both the sorts of Cement manufactured by your firm, and that of Messrs. Francis & Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good. I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant, Messrs. White & Son. (Signed) WILLIAM TITE.

From H.O. MINNIS, Esq., Surveyor to Board of Ordnance, London. War Office, Pell Mill, London, S.W., 3rd March, 1864.

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JULY 15, 1866.

1ST & 15TH
OF EACH MONTH.

VOL. VIII.

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ILLUSTRATION:

SKETCH FOR A CLERESTORY WINDOW.

Contracts.

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ECCLESIASTICAL COMMISSIONERS
FOR IRELAND, on or before the 19th day of July, 1866,
will receive Proposals for

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KILMAHON	Co. Cork.
ST. PAUL'S	City of Cork.
GARTAN	Co. Donegal.
TULLYAGNISH	
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The lowest Proposal will not necessarily be accepted.

Each Proposal to be forwarded sealed, prepaid, and ad-

dressed thus:—

"Proposal for the Church of
"The Ecclesiastical Commissioners for Ireland, Dublin."

NOTICE TO BUILDERS.

ECCLESIASTICAL COMMISSIONERS
FOR IRELAND, on or before the 24th day of July, 1866,
will receive Proposals for

WORKS TO BE EXECUTED AT THE CHURCHES OF

CILLEN	Co. Limerick.
KILMESSAN	Co. Meath.
CONNORREE LICENSED HOUSE OF WORSHIP (Parish of Castlemacadam)	Co. Wicklow.

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"Proposal for the Church of
"The Ecclesiastical Commissioners for Ireland, Dublin."

WAR DEPARTMENT CONTRACT.

NOTICE TO BUILDERS AND PAINTERS.

Office of Commanding Royal Engineer in Ireland,
Dublin Castle, 5th July, 1866.

TENDERS are required for Works to be
done in External and Internal Painting, Colouring,
Whitewashing, and Papering at

MULLINGAR BARRACKS,

IN THE

DUBLIN DISTRICT.

Persons desiring to Tender for the above Work must leave
their Names at the Office of the District Commanding Royal
Engineer, Dublin Castle, or at the Division Royal Engineer
Office, Athlone, on or before Wednesday, the 25th day of July,
1866, and pay the sum of 10s. 6d. for the Bills of Quantities
which will be forwarded to each Party.

TO BUILDERS.

PROPOSALS will be received for the Erec-
tion of a NEW NATIONAL BANK HOUSE and OUT-
OFFICES, at CHARLEVILLE, Co. Cork. The Plans and
Specification for same can be seen at the Office of the Archi-
tect, Wm. F. CALDERBROCK, Esq., 24, Harcourt-street, Dublin,
from Ten to Five o'clock, daily, until the 30th inst.
Tenders to be sent in on or before that date addressed to
M. J. Power, Esq., Secretary, the National Bank, 12, Old
Broad-street, London, E.C.
The Directors do not bind themselves to accept the lowest
or any Tender for the work.
Saturday, July 7th, 1866.

CONVALESCENT HOME.

TO BUILDERS.

TENDERS will be received from competent Builders for the
Erection of

**A CONVALESCENT HOME, at STIL-
LORGAN, Co. Dublin,** according to Plans, Elevations,
and Specifications, &c., to be inspected at the Office of Mr.
JOHN STIRLING BUTLER, 40, Stephen's-green East, up to the
21st inst., on which day the Tenders are to be furnished.
Solvent security will be required for the full performance of
the contract, and the lowest Tender will not necessarily be
accepted.
N.B.—Further particulars may be obtained on application
to the Architect.

BOARD OF PUBLIC WORKS.

NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be
received up to the hour of 12 o'clock noon, on the 28th of
JULY, 1866, for the ERECTION of

**A CONSTABULARY BARRACK, at
MAAM, in the County of Galway,** according to Plans and
Specification to be seen at the Office of the County Inspector
of Constabulary, Galway.

Each Proposal should be for a lump sum, and must be ac-
companied by a separate Detailed Estimate, giving Quantities
and Prices, and be endorsed, "Tender for Maam Barrack."

Both Tender and detailed Estimate should bear the Name
and Address of the Proposer on the back.*

Printed Forms for Tenders can be had at the Office of the
County Inspector, at Galway.

N.B.—Persons tendering should send in testimonials as to
character and competency, unless previously known to the
Board.

By Order of the Board,
EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 5th July, 1866.

* If this be not attended to, the Board cannot return de-
tailed quantities to the unsuccessful parties.

BOARD OF PUBLIC WORKS.

NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be
received up to the hour of 12 o'clock noon, on the 7th of
AUGUST, 1866, for BUILDING

A COAST-GUARD STATION, consisting
of Houses for One Chief Boatman and Four Men, Watch-
house, Boat-house, and Store, at DOORAN, near Mounthcharles,
County Donegal, according to Plans and Specification to be
seen at this Office, and on application to Mr. PATRICK LEECH,
Clerk of Works, at Enniskillen National Model School.

Each Proposal should be for a lump sum, and must be
accompanied by a separate Detailed Estimate, giving Quanti-
ties and Prices, and be endorsed "Tender for Dooran Coast-
Guard Station."

Both Tender and detailed Estimate should bear the Name
and Address of the Proposer on the back.*

Printed Forms for Tenders can be had at this Office, or from
Mr. LEECH.

N.B.—Persons Tendering should send in Testimonials as to
character and competency, unless previously known to the
Board.

By order of the Board,
EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 6th July, 1866.

* If this be not attended to, the Board cannot return de-
tailed quantities to the unsuccessful parties.

BOARD OF PUBLIC WORKS.

NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be
received up to the hour of 12 o'clock, noon, on the 31st of
JULY, 1866, for BUILDING

**A NEW COAST-GUARD STATION at
CASTLETOWNSEND, Co. Cork,** according to Plans
and Specification to be seen at this Office, or at the Office of
MARTIN MORRIS, Esq., 2, Smithgrove-terrace, Cork.

Each Proposal is to be for a lump sum, and must be accom-
panied by a separate Detailed Estimate giving Quantities and
Prices, and be endorsed "Tender for Castletownsend
Coast-Guard Station."

Both Tender and Detailed Estimate should bear the Name
and Address of the Proposer on the back.*

Printed Forms for Tenders can be had at the Station.

N.B.—Persons Tendering should send in Testimonials as to
character and competency, unless previously known to the
Board.

By Order of the Board,
EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 29th June, 1866.

* If this be not attended to, the Board cannot return de-
tailed quantities to the unsuccessful parties.

**MIDLAND GREAT WESTERN RAILWAY OF IRELAND
COMPANY.**

**OLD SHED AND ROOFING IRON FOR
SALE.**

The Materials of a large wooden shed, together with a
quantity of old Corrugated sheet iron, at the Broadstone
Station, will be sold in lots to suit purchasers, who will have
to take down at their own expense such portions of the sheds
as may be bought by them, and remove the same within a
month.

For further particulars apply at the Engineer's Office,
Broadstone Station.

Proposals to be sent in addressed to the undermentioned
not later than the 17th inst.

By Order,
HENRY BEAUSIRE, Secretary.
Broadstone Station, Dublin,
6th July, 1866.

NOTICE TO BUILDERS.

PROPOSALS will be received from compe-
tent Contractors for the Erection of a FACTORY in
LOWER LIFFEY-STREET, according to Plans and Specifi-
cation, which may be inspected at the Offices of JOSEPH
MAGUIRE, Architect, 6, D'Olier-street, up to the 24th inst.
The lowest Tender will not necessarily be accepted.

MILLARD AND ROBINSON,

Are unequalled for

PHOTOGRAPHS of Buildings during erection, details of same, and finished Structures.

PHOTOGRAPHS of Plans, Drawings, Sculpture, Models, Carving, &c., for publication, contracted for.

PHOTOGRAPHS of Buildings, Domains, &c., for sale.

PHOTOGRAPHS of Machinery, Designs, and Ornamental Iron Work.

PHOTOGRAPHS of all such carefully and punctually executed by

MILLARD AND ROBINSON,
THE ROYAL PHOTOGRAPHIC INSTITUTION,
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DUBLIN.

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a patent process, from the recipe of an eminent physician, by
SCHOOLING & CO., Wholesale and Export Confectioners,
Bettinal-green, London. One Shilling per box; post free,
14 stamps.—Sold by Chemists, Tobacconists, &c.

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"Varied are the types of beauty
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HYAM'S SUMMER GRANVILLE OVER-COATS,

Light, Graceful, and Easy.
Prices, 20s. 25s. 30s.

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Greater Favourites than ever.
Prices, 15s. 20s. 25s. 30s.

HYAM'S SUMMER DENMARK JACKETS,

In a variety of Materials.
Prices, 15s. 20s. 25s. 30s.

HYAM'S SUMMER TWEED SUITS,

In New and Fashionable Designs.
Prices, 35s. 42s. 45s. 52s.

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Suitable for all purposes.
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HYAM'S SUMMER TROUSERS,

In New and Fashionable Fabrics.
Prices, 10s. 12s. 6d. 14s. 17s. 21s.

HYAM'S SUMMER TROUSERS AND VESTS, Alike,

In a great variety of Fancy Tweeds.
Prices, 15s. 18s. 6d. 20s. 25s. 30s.

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To prevent mistakes and disappointment, it is particularly requested that all parties make sure that they are at No. 30, DAME-STREET, this being the only Establishment B. HYAM has in Dublin.

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CLOTHIER, TAILOR, HATTER, & OUTFITTER,
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OUR IMPROVED, SELF-FEEDING,
Slow-combustion, Vertical Tubular Boiler, for Heating Green-houses, Vineries, Churches, Public Buildings, Warehouses, &c., has proved itself most efficient from its immense heating powers, combined with small consumption of fuel. Our system of laying down Pipes is also worthy of attention.

HODGES AND SONS,**MANUFACTURING IRONMONGERS,**

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N.B.—Plans, Specifications, and Estimates, free on application.

Agents for Milner's Fire-proof Safes and Hornsby's Patent Washing and Wringing Machines.

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SHEET LEAD and LEAD PIPE, of the best quality, the former in Sheets, or cut to dimensions.
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—These Machines are used upon the principal railways of Great Britain, and are unrivalled for accuracy. Specimens may be seen, and every information obtained from
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L. M. begs leave to direct the attention of his numerous Patrons and the Public to his large and varied assortment of Ornamental Entrance Gates, and Piers, Field and Haggard Gates, Hurdle Fence, Garden Chairs and Vases; as also Wrought Iron Fire Proof Safes of various sizes to 30 cwt. weight.

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TO BUILDERS, CARPENTERS, UPHOLSTERERS, AND BLIND MAKERS.

J. AUSTIN and SON, Manufacturers of the above articles, particularly wish to direct the attention of the Trade to their

IMPERIAL PATENT FLAX SASH-LINES,

of which they are now making four qualities, and they strongly recommend that in all cases they should be purchased in preference to the PATENT LINE made from Jute, which article has neither the STRENGTH nor the DURABILITY of FLAX, consequently cannot give so much satisfaction to the consumer. They also invite the particular attention of Upholsterers and Blind Makers to their improved Patent Blind Lines, which are very much superior to anything yet offered to the Trade.

They can be obtained of all Ropemakers, Ironmongers, Merchants, Factors, and Wholesale Houses in Town and Country.

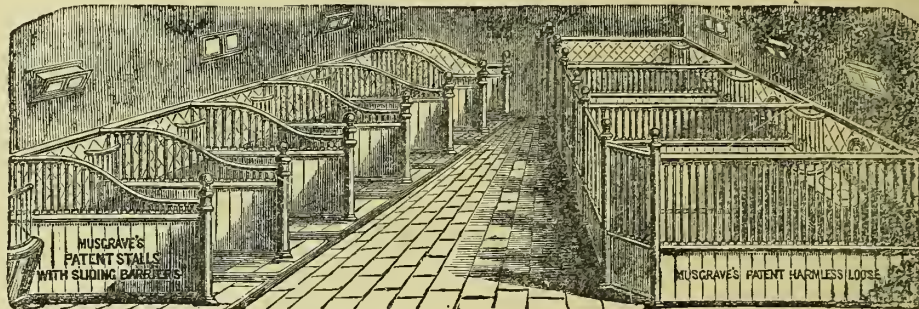
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HOUSE PAINTER AND DECORATOR, AND GENERAL CONTRACTOR,

Importer of English and French Paper Hangings, and Decorations,

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This engraving represents the patent Stable Fittings adopted by His Royal Highness the Prince of Wales for the new Stables at Sandringham.

**MUSGRAVE'S PATENT STABLE AND HARNESS FITTINGS.****MUSGRAVE'S PATENT HARMLESS LOOSE BOXES.****MUSGRAVE'S PATENT IRON COW STALLS & PIGGERIES.**

Gentlemen who cannot inspect these fittings are requested to write for engravings, as they are unlike those of any other maker, and were admitted to excel all the work of their class in the Exhibition.

They can be seen in first-class stables in almost every county in England; and MUSGRAVE, BROTHERS, are now fitting several very large establishments under direction of London architects, noted for employing only what is the best of its kind.

MUSGRAVE, BROTHERS, are the only Irish firm in their department of manufactures who received the Prize Medal of the International Exhibition and of the Royal Agricultural Society of England; and the acknowledged excellence of their productions has given to their House a speciality and importance not possessed by any other, and caused them to be resorted to from England and Scotland by Architects and others who have learnt their ability to execute really reliable Work on moderate terms.

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THE ONLY MEDAL given for **FIRST-CLASS MACHINERY** for WORKING WOOD.

See **JURORS' AWARD.**

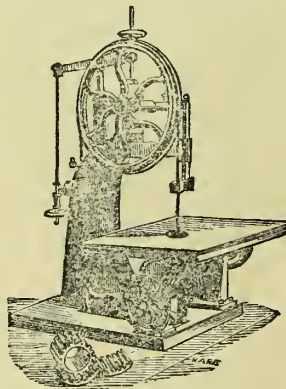
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IMPROVED ENDLESS BAND SAWING MACHINE, with Powis, James, and Co.'s PATENT ADJUSTMENT for PREVENTION of BREAKAGE to SAWS. Over 300 References can be given in England and upon the Continent, comprising Her Majesty's Dock and leading Ship-Yards, Contractors, and Others.

* * **POWIS, JAMES, & CO.,** invite all who are thinking of Putting Down a **MOULDING or FLOOR BOARD PLANING MACHINE** to see their **NEW PATENT FOUR CUTTER MACHINE.**

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POWIS, JAMES, & CO., also invite Inspection of their **IMPROVED "GENERAL JOINER"** for **SAWING, GROOVING, RABBETING, TENON-CUTTING and BORING,** together with **PLANING, THICKENING, and MOULDING,** most valuable to those who have not room to put down separate Machines for the different works named.

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Plans and Contracts supplied for the erection of **STEAM ENGINES, BOILERS, SHAFTEING,** and every description of **SAW MILL and RAILWAY WAGON and CARRIAGE MACHINERY,** upon application at Chief Office—26, **WATLING-STREET, CITY.**

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These fluids are chemically prepared, and they not only colour and throw up the natural grain and fibre of all kinds of light woods giving them a resemblance to old Oak, Wainscot, Mahogany, Satin Wood, Walnut, &c.; but they possess the highly important advantage of being clear and transparent, and a preventive against the ravages of Dry Rot. These stains, after a practical test of ten years, have been found to surpass all other stains, and where they have been used Dry Rot has not been known to exist.

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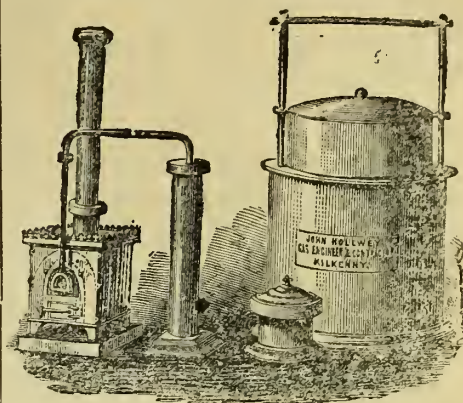
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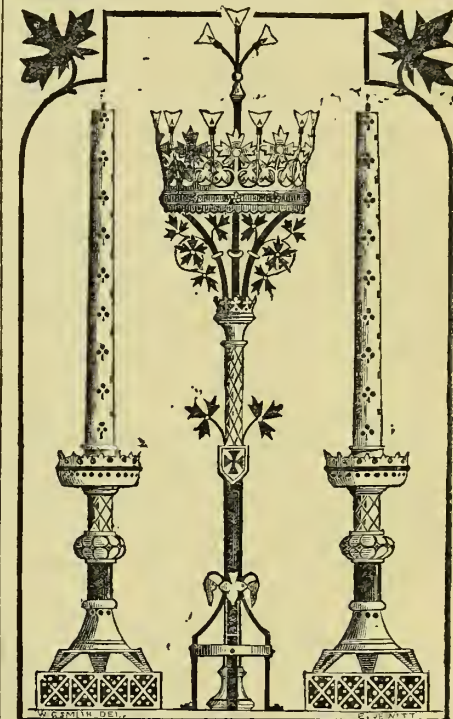
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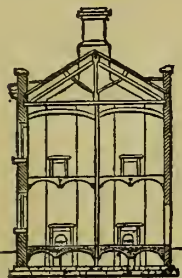
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Honorary Medical Officer—

EDWARD D. MAPOTHER, Esq., M.D., F.R.C.S.I.

Temporary Offices—

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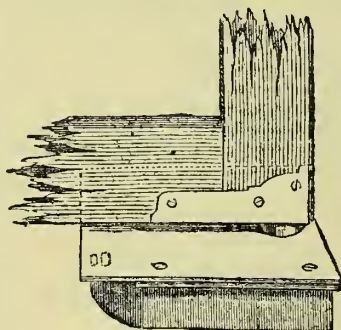
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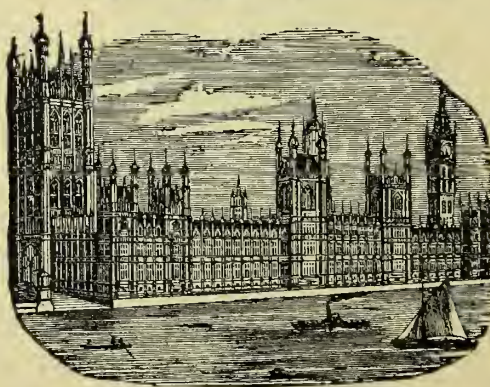
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The Dublin Builder.

VOL. VIII.—No. 158.

"BALD UNJOINTED CHAT."

SHAKESPEARE.

VERSATILITY OF GENIUS.



O those who love Art much and Ireland more, the announcement that the forthcoming Royal Hibernian Academy Exhibition will include some 150 of the late Dr. Petrie's peculiar and exquisite drawings will afford unqualified pleasure. In the brilliancy of the other acquirements which the departed genius more recently displayed, we are somewhat apt to forget in the accomplished writer and learned archaeologist the able and celebrated painter of half a century ago, the friend and no mean rival of Charles Danby, and the clever musician. It carries us oft into reminiscences of a departed glory of wit and genius, and the amazing *versatility* of talent which a brilliant school of Irishmen once displayed, and one at least still displays. Mahony, but the other day gone from us, who could move us from tears to laughter by his quaint pathos and wit intermingled, and the brilliant versifier to whom half a dozen languages were as ready and familiar vehicle for a humorous song as his mother tongue; Charles Lever still happily in enjoyment of undiminished vigour; Carleton, poor Carleton, with us still and yet dead, failing and fading, to our shame, in comparative obscurity and neglect; Mangan, faithful translator of the German Poets; the two O'Sullivans, ready and able politicians of their own school, but not less able in the more undebatable walks of literature of every class: poetry, tales of fiction, polemics, political pamphleteering, were all alike to these facile pens. How many more such names could be summoned that recal the palmy days of Irish periodical literature, when the *Dublin University Magazine* was brilliant and thoughtful above all its contemporaries, successors, and the poor present shadow of its former self? These were men of stature, heroic in different degree, but, giving him his due and proper place in such company, it is impossible to forget yet one other; Samuel Lover is yet to be regarded as one of the most extraordinary examples of this national versatility of talent to which we have referred. 'Sam Lover,' as he is more familiarly known in Dublin, will no doubt claim his place as usual in the forthcoming exhibition of the Hibernian Academy with a creditable landscape in oil. Five and thirty years he was giving to the world tales and stories of Irish character, which for genuine fun and humour have never been surpassed, illustrating with a ready pencil his own stories; not content to be artist and author both, Lover has tried his hand at music with no less skill. His opera, so called, of the "White Horse of the Peppers" brought into the world hallads which can never be forgotten. The humour of such a song as "Paddy's Rhapsody" for instance is even surpassed by the pathos and feeling of such as "Native Mnsic." No one has ever caught the tragicomic feeling of Irish national music so successfully, and Lover, we rejoice to say, continues still to send into the world inimitable ballads which are sung wherever the English language is spoken, to paint his pictures and make himself, we are told, an efficient officer

of volunteers withal. Lover and his earlier days recal his association with his kindred of greater brother genius, Petrie. The *Irish Penny Journal* published as far back as 1830 had Petrie for an editor, and Lover as a constant contributor. Lover gave it his "Illustrations of Irish Proverbs," the pictorial illustrations clever, the text of his stories inimitable. Petrie poured into its pages the vast treasures of archaeological lore with which his mind was stored, gathered from sources, many of them now lost to us, and both he and Lover brought their pencils to the task, in conjunction with Burgess, of illustrating the antiquities and ruins of the country. As works of art the engravings of the *Penny Journal* cannot rank high, for woodcuts in the year 1830 were not what they are in 1866, but nevertheless they have presented to us some kind of representation of many monuments now disappeared, and the archaeology, topographical and traditional lore is a mine of pleasant reading which renders the possession of these now rare volumes a very treasure. A re-edited reprint from their pages would make a charming volume.

This was but one of the services rendered to literature and history by Petrie, in labours which were extended over more than half a century. It was one not the least valuable as tending to popularize the study of archaeology, and the want of such a tone may now be felt in the daily decreasing number of critical scholarly antiquarians. It was but the other day his venerable white hairs and thoughtful face passed from among us. The latter years of his busy life were passed in circumstances comparatively straitened as is well known. The government of the day had at one time been induced to recognize his great claims, and a small pension of £200 a-year was granted to him from the Civil list. For services so distinguished as his it was not unnatural to suppose that this pittance might have been continued to his daughters left in painfully straitened circumstances, and it is with a feeling of intense disappointment that we miss their names from the recent list of pensions granted. We would not wish to advocate the theory that the services of any distinguished man should be unrecognized because he has had the good fortune to possess some money, but we do think the same list which gave £300 a-year to the widow of the late Sir Charles Eastlake, R.A., a lady well known to possess affluent means, might have found room for the orphans of George Petrie. This is not as it should be. It is idle to say that such a case should be met by voluntary subscriptions. His services were less rendered to individuals than to the nation at large, and his family should rather enjoy his pension as a matter of right than their sense of dignity be hurt by eleemosynary aid.

DOWN WITH THE HOUSE-JOBBER.

With what unbounded satisfaction do we observe a deadly blow dealt at our natural enemies, the house-jobbers. As a body we detest them cordially, and have little respect for their so-called "rights" of property. Some difference of opinion may exist as to whether to confiscate the property of the offenders would be to "do a great right and do a little wrong," but even they themselves must unwillingly admit that to be driven out of the field by legitimate competition does not admit of much discussion.

When last noticing this question we announced that some steps were in progress to make a beginning in the way of providing

decent homes for the poor of this city. It is with no small satisfaction we observe that the INDUSTRIAL TENEMENTS' COMPANY (LIMITED) is fairly afloat. The present capital is £20,000 in £10 shares. The directory is influential and respectable. Mr. Nugent Robinson is secretary, and Mr. Charles Geoghegan architect and surveyor. We hope to see the success of this company result in the formation of a score more. A block of houses is in course of erection by the company in Meath-street. Messrs. Walpole, Webb, and Bewley have erected a block of houses for their workmen at the North Wall. We understand also that Mr. Geoghegan is engaged in the erection of a similar block at Bray for Lady Verner. In another place will be found an outline of a new Act of Parliament relating more especially to compulsory sale of tenements in cities in England and Scotland, the provisions of which should be extended to Ireland. We fear our satisfaction will not be shared by the "Anti-political Ratepayers," and that there will be mourning and sounds of woe in Lower Erne-street.

SKETCH FOR A CLERESTORY WINDOW.

Our illustration this issue is one of those *bits of detail* which we purpose giving occasionally, as much to diversify the general character of the illustrations as to afford to the junior members of the profession a clear insight into the component parts of a building, which is only to be accomplished by considering each portion separately.

Our sketch is one of Mr. T. Hevey's. He has evidently sought for effect more by a bold use of light and shade than by any elaboration of detail. (As to how it has been gained we need only refer to the sketch.) The effect of a range of these windows in a clerestory—the long line of the eave broken up by the gablets—to our thinking would be very picturesque.

CONSECRATION OF HOWTH CHURCH.

THE new parish church of Howth was consecrated on the 3rd inst. by his Grace the Archbishop of Dublin. The building stands on the site of the old church near to the railway station. The style is that of the thirteenth century, and consists of nave, chancel, north and south aisles, vestry, and porch. At the north-west angle stands the tower, containing the stairs leading to the organ gallery, and surmounted by the spire, which rises to a height of about 80 feet from the ground. The spire terminates in a very handsome wrought-iron gilt finial. The lower part of the tower is old, and has been utilized in the new work in a manner highly creditable to architect and builder. The principal entrance is at the west end, through a pointed doorway with deeply-recessed jambs, the capitals and arch-mouldings being elaborately carved. The nave is separated from the aisles by a series of pointed arches of red and yellow brick unplastered, resting on polished marble columns, with handsomely carved capitals and moulded bases. The pulpit is of Caen stone, and of chaste though plain design. The general effect of the interior is pleasing, from its subdued light and colouring, altogether free from the objectionable glare observable in some modern churches. Sittings are provided for 450 persons, the total cost being £2,600. The church has been erected from the designs of Mr. J. E. Rogers, architect, by Mr. Walter Doolin, of Westland-row, builder. The upholstery and furniture were supplied by Mr. Joseph Digges, Lincoln-place. The organ is a comparatively new instrument, having been erected a few years ago by the Messrs. Telford, of Stephen's-green, in the old church.

NOTES IN SPAIN.—II.

PAMPLONA, the modern capital of the province of Navarre, is romantically situated at the foot of the Pyrenees, on the direct road from Paris to Madrid. The city held out successfully against the French under Soult; it is fortified strongly on Vauban's plan—is a tidy French-looking town. Kid gloves being its staple trade, they are very neat and of gaudy colors, particularly yellow and green. I bought one dozen pair of ladies' kid gloves at one real (or 2½d.) a pair. Gentlemen's 5d. a pair, and good ones.

It being Whitsuntide, during my short sojourn in Pamplona, I had not leisure to examine more than one of its numerous churches—the Cathedral dedicated to the patron saint of Spain (Santiago) St. James; but yet spared time to witness the great national attraction—the bull fight.

The circus—or bull ring—in Spanish (Plaza del Toro) is a vast amphitheatre capable of accommodating fifteen to twenty thousand spectators. There are three divisions, or classes, admitted. The first class are the highest up ("alto") same as "the Gods" with us—here are to be found only the dons and grandes—with their Senoras and Senoritas; the second class get into the boxes marked "La sombra" (the shade), which is covered in and more secure and remote from el Toro than the Pit. The third class (Pit) occupy the lower seats, which is truly called "el Sol," for, on the spectators' bare heads, he shone down that day with unusual heat (110°) and splendour.

Anon! a bustle is observed on the left of where we were seated, and a trumpeter advances to the centre of the circus and blows the three calls that precede the commencement of this barbaric amusement, which are shortly responded to by the appearance of a tall muscular looking Spaniard who approaches opposite the box in which the President of the Province is seated, and bows, with unfeigned respect to el Senor, and challenges the then absent bull to mortal combat, and suiting the action to the word, casts his gauntlet upon the ground, then turns towards the stalls, or stables, where it is expected the bull is taking his siesta, and is agreeably surprised at the suddenness of the response—Master Toro, being destined for the arena, was kept at grass in a lonely and remote region, away from the haunts of civilization, for months before; he was, consequently, more plucky and ferocious, and as untamable as the North American buffalo. From their condition, their youth, and the length and sharpness of their horns, they are rather formidable customers to battle with.

On the bull's entrance, he seems for a second bewildered with the din and clattering of so many people, and the gaudies and diversified colors of all hues under heaven. He hesitates, paws and scatters up the saw-dust that is shortly to drink up his own blood.

"Sudden he stops—his eye is fixed! away, Away, thou heedless boy—prepare the spear—Now is thy time to perish or display

The skill that yet may check his mad career;
With well-timed croup the nimble coursers veer,
On foams the bull—but not unscathed he goes,
Streams from his flanks—the crimson torrent flows;
He flies, he wheels, distracted with his throes,
Dart follows dart, lance, lance, loud bellows

[speak his woes"]

The excitement of the bull fight is heightened when the bull singles out with his fiery eye the banderola of a Chulo, and rushing after him, almost catches him on his horns, when the activity of the Chulo enables him to vault clean out of the arena into the passage outside the barrier; sometimes a Chulo "comes to grief" and is transfixed before he is able to vault the barrier.

The "piccadors" then surround and enrage the bull to madness, flinging their darts into his hide, some of them penetrating his body. Those arrows fly, burn away, and finally explode in the flesh of the beast, rendering the atmosphere redolent of "live" beef steaks!! and irritate the bull so much that he rushes at the "matador" and uplifts rider and Roziquante some three or four metros in the air. When they come back again to mother earth, Master Toro charges, and would have made short work of them, but for the Chulos who are continually on the alert, and by flourishing their "hauderolas" distract the bull's attention.

By this time no less than six or eight gay "Andalusian steeds" have been goaded to death, and are drawn out of the amphitheatre (by a train of eight mules gaily caparisoned). The "espada" then advances, and after a short time despatches the bull by inserting his Toledo blade right between the shoulders of the noble beast who vomits forth his heart's blood, when the mules are again put in requisition, and are yoked to the horns of the bull, and canter out of the circus with their prize.

Sometimes the "espada" errs in killing the bull, thrusting his sword a little to the right or left of the exact spot, so that the poor beast may be seen with the point of the weapon protruding from his shoulder, while the hilt remains exposed at the top of the shoulder.

The espada who thus hungles his business, suffers from the jeers, taunts, and sufferings of the "Solites" for a time, till he extracts the weapon, then measuring carefully his antagonist, and, on the second trial kills him.

I spoke with horror to some gentlemen (Spaniards) present, of the brutality of the scene, adducing the manner of the death of the bull in the foregoing act, and also several horses who had been goaded by the bull so desperately that the wound in the horse's side permitted his entrails to escape, he being spurred on, and eventually becoming his own suicide, his howls tripping him up, till at last he falls down dead, having trampled on the last shred of them.

Don Manuel said, with truth, such scenes as our prize fights in England "are quite as indicative (if not more so) of barbarous and inhuman feeling as the Spanish bull-fight." I thought there was justice and truth in the remark when I remembered the fight between Sayers and Heenan a few years before.

I met a Dublin gentleman at the hotel I was staying at. We went to see the Carabineros at drill in the square at Pamplona, with heat 100° in the shade. They are a smart well-appointed corps, these Biscayan troops, but were deficient in the physique of the British soldier.

The cathedral of Pamplona is a pretty fine building—if I recollect aright—it is built in the Italian style, the pillars supporting the roof of the aisles and nave struck me as being very nice looking granite, polished like marble, and of a reddish hue, contrasting prettily with the white and black marble of the peristyle. The organ was playing while I was in the church; I confess I did not much admire its tones, though it appeared a modern instrument, not like the dingy, dusty, and antiquated one I saw afterwards at Calahorn, with horizontal pipes, like the gigantic bellows of Vulcan!

The houses in Pamplona struck me as being more French in appearance, like those of Vittoria, than I saw anywhere in the Peninsula. There is an aqueduct entire over the railway to Saragossa more than 1,000 years old, some sixty or eighty feet high outside the city, which, I suppose, was rendered useless by Napoleon's Lieutenant (Soult) during the siege of the place in 1814.

The spurs of the Pyrenees in the vicinity are remarkable for their novel appearance, the rocky summits of the peaks being at once visible from the fertility and greenness of their bases from their snow-line downwards. The valleys on the road by Elizondo to Bayonne, in France, were, at least, 1,200 feet deep almost perpendicularly from the Canimo-real beneath us.

Reverting to the bull-fight, imperfectly described above, there were upwards of sixty horses and seven bulls killed the first day; and, notwithstanding the aversion I felt on the occasion I could not stay away the second day from the sanguinary and disgusting spectacle!! to be re-enacted again!

Excuse the length of this sketch; in my next we will have something to say of Vittoria, Logrono and the Rioja country, if these hasty effusions are not distasteful to your readers, or out of place in your popular and practical journal.

Dundalk, 7th July, 1866.

STRUCTURAL SHORTCOMINGS OF SOME GLASGOW ARCHITECTS.

THE *Mechanic's Journal* is rather severe on modern construction in Glasgow, it says:—

Within a radius of half a mile round where we write are to be found some edifices of the largest, and externally the most imposing in appearance, that the city of Glasgow possesses; let us add too, that as far as looks go, inside as well as out, many of them quite equal, and one or two very new ones probably surpass, any other structures of their class that are to be found in the realm of the British queen.

If, however, we scrape away the paint and mortar and artistic mouldings as well as all other decorations, and carefully look at the structural design—What in many cases do we find? The direct ignorance of the strength of material, and an evasion, more probably an omission through simple want of proper technical information on the part of the architect, of all those laws on which the security, economy, and real beauty of a building depend.

There can be very little doubt left on the mind of any one who will take the trouble to review the requirements of a modern warehouse or modern merchant's store, that in designing such a building there is a great deal more needed than the mere rule of thumb knowledge and practice that sufficed before such a class of buildings were called into existence. We do not here refer to the purely decorative part of architecture, although it is much to be wished that this now-a-days was practised as generally and with as much fidelity as formerly.

In this respect, however, the universal demand on the part of all public, as well as private corporations,

of getting a job done that will answer their purpose at the cheapest possible cost, militates too severely against the architect's purity of taste; but on the other hand, this influence is surely that which should compel the display of beauty (correct proportion) in structural design.

We now come to the points of error, and take it for granted, since no well-informed person can refute it, that one of the very first elements in diminishing the cost of a structure is the production of the work with the least weight of material proportioned and arranged in accordance with the laws upon which its particular functions depend.

What shall be said then when we observe a huge building of several stories (we do not say of what class the building we refer to is, whether warehouse, mill, or what not, as this might lead to particulars which it is better to avoid, whose floors are supported on girders and columns, the latter certainly, and we believe the former, made of the same section and weight through every storey, from the ground floor to the roof, and in some places, too, the columns three or four times heavier than they should have been.

We, a few weeks since, met with here in Glasgow a lot of pillars, whose diameter was, as well as we could judge by the eye alone, 11 or 12 inches, and of the amazing thickness of 4 inches of metal. At first it appeared difficult to credit what we saw—thinking that the apparent thickness at the ends was a mere internal projecting ring of metal, placed there with the view of obtaining large bearing surface; but to our amazement we found on close inspection that the bore was the same throughout. Surely that is "a job by the ton" was exclaimed by one with us; to which he graphically added, "The day will come when these will be taken down and recast into proper proportion, and gain shall be made by the quantity of iron saved."

What shall be said about the overlooking *in toto* of what is understood by the principles of continuity, and building walls of the same thickness throughout, from the foundation to the roof story; of piling superstructures in many instances several times heavier than these should be, upon sparrow-legged, giggling frames of cast iron, as intermediates and insignificant corner pillars of block in course masonry at the angles, as the support of the entire building!!

In regard to the purely decorative style much in praise may be said, but this, combined with that rule of thumb expression, "near enough for practice," which we find far too often made use of here, is an abomination, an eyesore, difficult to be forgotten.

TRAVELLING STUDENTSHIP, ROYAL ACADEMY.

It is with great pleasure we observe that the travelling studentship of the Royal Academy—a prize well worth competing for—has been this year carried away by our countryman, Mr. Samuel F. Lynn. The election was made unanimously, Mr. Lynn's group of sculpture (The Death of Procris) having been pronounced of extraordinary merit. In each R. A. contest which Mr. Lynn has entered he has highly distinguished himself, carrying off at one time the silver medal for a six-hours' study of "the Deluge;" again, the coveted gold medal for the "Death of Lycan," a noble work; and this year has added another to his well-earned laurels. Mr. Lynn has established for himself a reputation in Dublin by the remarkable relief in the tympanum of the Provincial Bank.

THE ARCHITECT THE OWNER OF HIS PLANS.

In the county court, on the 29th ult., before Mr. J. K. Blair, judge, Robert Esdaile, Harford House, Fairfield-crescent, Fairfield, who appeared in person, sued Thomas Mercer, architect, 40, Church-street, for the detinue of certain plans and specifications of property for which the defendant had been architect. The plaintiff stated that some time ago, requiring some alterations of property in London-road, he employed the defendant to prepare plans and specifications. After the work was completed he required the plans, in order that he might be prepared when any question of drainage or repairs arose. He called at the defendant's office several times, and was at last told that the defendant declined to let him have the plans. For the defence, it was contended that it was the custom of the architect to retain the plans he made as his own property, unless a special contract to the contrary was made. Sometimes the plans were given up, but merely as a concession. He called Mr. Wordley, architect, who confirmed the allegation as to the custom of architects retaining their plans as their own property. The owner of the property might have obtained the plans that the builder worked from. The judge nonsuited the plaintiff, and allowed defendant his costs.—*Builder*.

HARBOUR ENGINEERING IN IRELAND.*

DUBLIN, BELFAST, LONDONDERRY.

THE port of Dublin affords a fine example of the success that can attend a single well-devised work in harbour engineering; for although the steam dredging operations so long carried on by the Ballast Corporation have considerably deepened the channel of the river Liffey itself, it is chiefly by the direction given to the tidal scour by the Clontarf wall, suggested by Chapman and carried out by Giles and the elder Halpin, that the increased depth of water upon the bar has been produced. The steam dredging operations upon the river have been conducted with improved appliances by the existing engineer of the corporation, our fellow-member, Mr. B. B. Stonay, who has constructed iron hopper barges for removing by steam tonnage the dredged material to suitable places of deposit of the unprecedentedly large size of 1,000 tons' burthen.

Belfast harbour is another favourable example of harbour engineering under circumstances of considerable difficulty and complexity, an excellent account of which has up to a rather late date been given here by my predecessor, Mr. M. Mullins, V.P. At the present time vessels drawing 22 feet of water can come up to the town at high water of ordinary springs, so that the effect of the works executed has been practically to more than double the available harbour depth, and to give the town a fine chain of docks and basins, with a wharfage of nearly 8,000 feet, and at a very small outlay under the circumstances.

I am indebted for an excellent history of the various projects and works for the improvement of Belfast harbour to my friend, Mr. George Smith, C.E., now consulting engineer to the port, and who for twenty-seven years held the responsible position of its acting engineer:—

The harbour of Belfast was originally in the creek or river that runs down the centre of High-street, and empties itself into the river Lagan. It is now covered over as a sewer.

The first mention of Belfast as a place of trade is in the charter of James I., where the inhabitants are allowed to embody a guild of freemen and to erect a wharf or quay. An impetus was given to the trade in 1637 by the purchase, on the part of the Crown, of the exclusive privileges enjoyed by Carrickfergus to one-third of the duties on goods imported into that town, and other monopolies. For a century after the trade was confined to this small river. In 1720 a quay, from the mouth of the creek to the Long Bridge (now the Queen's Bridge) was built, and now forms part of Donegall Quay, extending from the Queen's Bridge to the foot of High-street. This was the commencement of the present harbour.

As the trade of the port increased, the dues upon shipping became of importance to the government, and they appear to have given considerable attention to the subject, and early in the present century they obtained reports from the most eminent engineers of that day, with the view of procuring greater security for the shipping and the revenue of the port.

But as the government would only grant the merchants temporary assistance, by way of loan, they found themselves thrown on their own resources; and from the time that Mr. Rennie reported to the commencement of the works of improvement in 1839, the harbour committee had designs for docks from the most celebrated engineers of the day, as well as from others of lesser note, and some by anonymous authors.

The engineers that were consulted by the authorities were Mr. Killaly, the Messrs. Rennie, Mr. Telford, Mr. Walker, and Mr. Cubitt. Mr. Rhodes furnished a report at the request of an association of merchants entitling themselves, 'the committee of the proposed ship canal and floating docks.' Mr. Woodhouse, the resident engineer of the committee, also reported, but it was merely in confirmation and adoption in part of Messrs. Walker and Burges' report, &c. The following propositions were contained in most of the plans:—

1. For turning the river Lagan in front of the town into floating docks, and connecting them with the Bay of Belfast by a canal with locks.

2. For making floating docks on the reclaimed land, or slob, near the town, and connecting them with the bay as before, leaving the river opposite the town in its natural state.

3. For making floating docks on the slobs and reclaimed land as before, and connecting them with the bay by straightening and deepening the natural river, so as not to interfere with the ebb and flow of the tidal waters.

If the system of lockage which was contained in the two first propositions had been adopted, the pre-

sent tonnage of the port could never have been arrived at.

Independently of the limited nature of the traffic that could be passed through a lock in the course of a day, the cost of Mr. Rennie's scheme in 1821, and afterwards in 1826, in which he makes the entrance of his canal at Whiteabbey, was upwards of half a million, while the tonnage of the port was under £1000. It must have been wholly completed before any part of it could have been used.

It was a favourite scheme with the late Marquis of Donegall, then chairman of the Harbour Board, as well as with the directors of the Lagan Navigation Company, one of whom was also a very active member of the Harbour Board, that the river above the Long Bridge, which was nearly empty when the tide was out, should always be maintained at high water level, that it might be an ornamental sheet of water to his residence at Ormeau with the marquis, and with the company that it would enable barges to navigate the river and enter there at all times. The strong influence that could be brought to bear in this direction may account for there being so many schemes for damming up the river.

The improvements in Belfast harbour, from their commencement to the present time, have been carried out under my superintendence, in accordance with the design of Messrs. Walker and Burges, which were in conformity with the principle contained in the statement No. 3.

The plans of Messrs. Walker and Burges were adopted by the Harbour Committee in 1830, and confirmed by Act of Parliament in 1831; but in consequence of the difficulty they experienced in raising money this Act was allowed to expire, but was renewed in 1837. It was under the powers of this Act that the improvements have been carried out, although it has been superseded by the Act of 1847, which is now the one in operation.

The works were commenced in February, 1839, by Mr. Dargan, who undertook the formation of the first section of the Victoria Channel; cost, £32,000. The slopes of the cut were shown in the drawings to be 2½ to 1, but in consequence of the very soft nature of the clay, or silt, they were altered very considerably.

The second section of the channel was commenced. In consequence of the very soft nature of the soil we had to go through (the same as the first section), the slopes were made 5 to 1, the depth of cutting being from 13 to 14 feet on the general level of the slob. The cost of this work, including all expenses, was £42,696.

It was very gratifying to find, after several years' experience, that the dimensions of the channel were so well adjusted to the velocity of the water flowing through it that no silting up had taken place for several years; what dredging has taken place in it has been caused by adjoining works, principally the inclosure of the slob on the county Down side of the river. Before commencing the channel vessels drawing more than 5 feet water could not get up to the town at low water, but on its completion there were from 10 to 11 feet, and from the upper end of the channel downwards towards Garmoyle there is now not less than 13 feet at low water, and at high water spring tides 22 feet.

In looking at the plan of Belfast harbour (Plate 5) it will be seen that Garmoyle is a deep pool commencing near the Seal Channel, where it begins to deepen, and continues to do so far as the buoys of the Middle Bank, where there is 19 feet at low water; it then gradually shallows till it reaches the lighthouse, where the pool ceases, and the lough becomes of the general level. Various reasons for this formation have been given, as very little alteration, if any, has taken place in it for many years, the most favourite one being that the bottom of it is filled with springs from the land. In examining the Seal Channel in opposition to some of the railway bills, I found that wherever the Seal Channel sent out forks, or minor channels, there it immediately deepened the same as Garmoyle, which commences to deepen at the junction of the old channel of the Lagan with Joy's Channel. Do not these pools arise from the current of the two streams forming eddies at their junction, which the soft silt of the lough is not able to withstand, and gulls itself into a hole or pool? I mention this, as there may be some novelty in the idea, but it is a very feasible one, for the ground is so soft, as I have previously stated, that it will not stand at a less slope than 5 to 1. It is causing great annoyance to our present works.

Simultaneously with the making of the Victoria Channel the river opposite the town was very much widened, as well as straightened, from the bridge downward to the upper end of the channel. The Queen's Quay was put 250 feet farther into the county of Down than the margin of the river; and on the opposite side Donegall Quay was removed 50 feet into the river, so as to gain width for sheds between it and the street.

I am sorry that I cannot give you any information

respecting the increase in the velocity of the tide after the making of the channel. I did not take any observations till after it was opened, when at half ebb it ran from ¾ to 1 mile per hour during neaps, and in freshes 1½ to 1¾ miles per hour. I do not think the alteration made much difference, as the tide had free scope up to the town when I took my observations; but as the banks of the river are being gradually closed in by our improvements, I expect a change is taking place.

Since the formation of the Victoria Channel upwards of 7,800 feet of quays have been made or renewed, and a patent slip erected capable of taking up vessels of 1,000 tons. We have works in progress that will cost £150,000, the principal being a graving dock, 450 feet long and 15 feet water on the cill at high water neaps; also a floating dock, 1,400 feet long and 500 feet wide, capable of taking in vessels drawing 23 feet at neap tides.

A third harbour to the improvements of which we may point with pleasure is that of Londonderry, at present probably the most rising town and port in Ireland.

I have been favoured by my friend, Mr. Thomas Stevenson, of Edinburgh, one of the engineers engaged in these improvements, with the following brief account of the works, to the complete success of which I can speak from personal knowledge, having been myself intrusted by the port and harbour commissioners with the valuations of the whole of the ancient quays, frontages, and wharfage property, extending to nearly a mile in length, preparatory to their being swept away, to make room for the new quay, alongside which ships drawing more than 20 feet can lie up:—

So recently as 1854 the quays of Londonderry were owned by private individuals, each proprietor occupying a portion of the quay in front of his warehouse, and building his own quay in any direction and of any material, according to his own fancy. Each portion of quay was walled in, and there was no thoroughfare along the harbour in front of the warehouses. A more inconvenient arrangement could hardly be conceived. In 1854, however, an Act of Parliament was obtained incorporating the commissioners of the port and harbour of Londonderry, and empowering them to levy dues and borrow money for the purchase of the private quays and the construction of works on a large scale for the improvement of the port. These works were designed and carried out by Messrs. David and Thos. Stevenson, of Edinburgh. The whole of the private quays have been purchased and removed; spacious quays, affording a roadway of 50 to 80 feet in width, have been formed along the harbour for a distance of 3,730 feet, at a cost, including dredging vessels and the purchase of property, &c. (which amounted to about £64,000), of about £130,000. A new graving dock has also been constructed; it is 314 feet in length, and has a depth of 6 feet 9 inches at low water of spring tides, or 15 feet 9 inches at high water on the cill, and with pumping-engine and other necessary appliances has cost about £24,000. The works of the quays were chiefly contracted for by Mr. McCormick, M.P., and Mr. M. McClelland, and those for the dock by Mr. Hugh Kinghorn, of Leith. The whole was carried through by Mr. McDonald, as resident engineer, under Messrs. Stevenson. The only other portion of the parliamentary work remaining to be executed is the dredging of the "flats" in the lower part of the estuary, which it is intended to deepen to the extent of 3 feet for a distance of nearly a mile, so as to afford a depth of 22 feet at high water. These dredging operations in Lough Foyle have been as yet only partially carried out. In addition to these works several lighthouses have been either built or remodelled. The Royal Mail Montreal Steam Ship Company's first-class American steamers now make Londonderry their port of "call" and "departure" for landing and embarking mails and passengers; and the ancient city of Derry, with its rapidly-increasing trade and its connection with the whole northern part of Ireland, bids fair to be soon one of the most flourishing ports in this country.

The works were commenced in 1855, since which time the tonnage of the port has nearly doubled itself, and, as stated by the secretary in his letter of 2nd October, 1865, "it is the general opinion of the commissioners that the same amount of accommodation has nowhere been supplied at a lesser cost, and every portion of the works still maintains as high character for stability and effectiveness as when completed."

The managers of St. Vincent's Hospital, Stephen's Green, have purchased Lyndon Castle, Blackrock, for the purpose of converting it into a sanatorium to which they will send the convalescent patients to enjoy the benefit of country air, sea-bathing, &c., previous to returning to their homes.

* From the President's address to the Institution of Civil Engineers of Ireland.

THE O'CONNELL MONUMENT.

IN our correspondence column will be found letters from two of our subscribers who sent in competition drawings for the O'Connell National Monument. The writers state that they have applied repeatedly to the committee for their designs sent into the first competition without receiving any reply. Such conduct on the part of the committee is very reprehensible. We can inform those gentlemen that we recently saw a number of drawings, among which we presume theirs will be found, lying piled against the walls in the waiting room of No. 1 Committee in the City Hall, uncared for and covered with dust. We would recommend aggrieved competitors to place their cases in the hands of solicitors, and to decline to receive their drawings, if in any way injured, without compensation.

ARTIFICIAL GAS-COAL.

WHILE experimenters with petroleum as steam fuel have been endeavouring to create a market for the heavy mineral oils, which have of late become a serious obstacle to the profits of oil-makers, Mr. George McKenzie, a Glasgow gentleman, has been conducting a series of experiments with a view to using it in the manufacture of gas. Mr. McKenzie, having had some experience as a gas engineer, conceived the idea of making the waste heaps at the pits' mouths a profitable material for gas making; and knowing that others had attempted to make gas from oil alone, he set himself to work to discover how the two might be combined, so that one would supply the requisite properties which were deficient in the other. Firstly, it is an established fact that any endeavour to make gas from mineral oil involves no small amount of waste, because a proportion of the vapours will invariably be reconverted into oil upon coming into contact, accidentally or otherwise, with a cool surface. It is also well known that the siftings—or coal gum, as it is called in Scotland—which lie as refuse in the neighbourhood of all pits, are not suitable for gas-making purposes. On the one hand, we have a material deficient in carbon; and on the other, another material very rich in this property. The two combined in careful proportions go to make a substance which, when distilled in an ordinary fireclay retort, gives results which are likely to prove of incalculable importance to both gas companies and crude oil manufacturers. Mr. McKenzie grinds the coal "gum" to a fine powder, and then saturates it with the necessary proportion of crude petroleum or shale oil, and although the proportion is regulated according to the quality of the coal, still the variations are so slight as to render the manipulation a matter of the greatest simplicity. This mixture is then distilled, and it appears that the yield is not only much greater than that from the best gas coal, but that there is no waste or recondensing of oil, and that a coke is left which, for certain special purposes of ironmasters, promises to be worth three or four times the value per ton of ordinary coke. We may here make a comparison, as it was explained to us by the patentee, the correctness of which, we have every reason to believe, has been amply proved by experiments on a commercial scale. At the present prices of material, the mixture of coal and oil will cost about twenty shillings per ton. One ton will give 16,000 cubic feet of gas, equal in illuminating power to 32 sperm candles. On the other side, the cost of Lesmahago gas coal is at present about thirty shillings per ton. It yields about 9,000 cubic feet of gas. The coke from the Lesmahago coal is sold at five shillings per ton. It is considered by some competent judges that the coke from Mr. McKenzie's mixture is worth about twenty shillings per ton for ironmasters' purposes. A number of retorts at the Johnstone Gas Works—a populous village about twelve miles from Glasgow—were placed at the disposal of the patentee for the purposes of experiment, a separate holder was set apart to contain the gas, and on several nights the entire town was illuminated with the new gas. In addition to this, we are told that a quantity of gas was left for eight days in the holder, at the end of which time it was found that it had not lost anything in bulk by condensation, the only perceptible change being the expansion to the extent of about three inches during the day, and a corresponding contraction during the night. The durability of the gas burnt at Johnstone is spoken of very favourably; for it appears that one cubic foot burnt by a four-wick flame, will last seventy-eight minutes. It would thus seem that in every respect the new process effects a great saving. Applied to the manufacture of oil at a low red heat, we are told that the addition of a certain proportion of crude oil to the shale assists the passing off of the vapours, and that the addition of thirty gallons of oil to a ton of ordinary Scotch shale, will cause it to yield 80 gallons of oil. We are not prepared to say how far this may be true in commercial practice, but the

idea is worthy of consideration. Mr. McKenzie is about to visit London, with the object, we believe, of introducing his discovery to some of the London gas companies. City people have complained long and loudly of the quality and cost of their gas; perhaps they may find a remedy for their grievances in Mr. McKenzie's process.—*Oil Trade Review.*

CORRESPONDENCE.

THE O'CONNELL MONUMENT.

TO THE EDITOR OF THE DUBLIN BUILDER.

SIR,—Will you kindly inform me what steps should be taken to COMPEL the O'Connell Monument Committee to return to their respective owners the drawings sent for competition. My drawings have been in their possession since January, 1865; and, although I made many applications, I have not as yet been able to recover them. Once I went to the City Hall, and was told by a porter that "he could not give them without an order from one of the honorary secretaries."

I have written twice to one of the secretaries, who had neither the courtesy to answer my letters, nor to send me the necessary order.

I might console myself with the *flattering* (?) reflection that they were loath to part with the drawings, were I not informed that all the drawings (which have not as yet been returned) are scattered in picturesque confusion over the unwashed floor of a small room, covered so thickly with dust, that one could scarcely recognise his own. Can you tell me if such is the fact? TIMOTHY HEVEY.

July 13th, 1866.

TO THE EDITOR OF THE DUBLIN BUILDER.

2, Park-place, Leeds.

SIR,—Your's to hand to day. What would you recommend me to do in order to get my designs from the committee for the O'Connell Monument? I do not know any body in Dublin sufficiently well to ask them to undertake the responsibility of seeing to the transmission. I really think the above committee might take that amount of trouble, in return for what the architects have done for them. Are any of the influential competitors going to bring the committee to a sense of duty? Yours, ED. BIRCHALL.

P.S.—I have written for my designs several times. July 10th, 1866.

[In another column will be found some remarks on the subject alluded to by our correspondents.]

INGRATITUDE OF ARCHITECTS OUT FOR A HOLIDAY.

TO THE EDITOR OF THE DUBLIN BUILDER.

The Retreat, Otium-cum-dig.

July 2nd, 1866.

SIR,—I do not think it requires any prefatory apology from me to say that an article which I have just perused in the DUBLIN BUILDER is reprehensible in the highest degree. I read, sir, a rapid—unpleasantly rapid in such hot weather—account of the excursion of architects to the city of Kilkenny. The mere mention of the thing itself is to me, a veteran in archaeological excursions, a thing pleasant enough. Archaeological societies are a great and grand institution. I have smoked cigars all round Wells, I have lunched at Tintern, I have likewise partaken of *dejeuners a-la-fourchette* at Fountains, I have breakfasted with minor canons and dined with bishops, and I entertain the highest respect for the decanical port and other vintages of cathedral establishments generally.

Antiquity, sir, unlovely in woman however, is not unlovely in all things. In "Stilton" it is desirable, and it transforms grim abbeys into suitable haunts for pic-nics; I am an enthusiast in archæology, but when I read the meagre notice in your paper of the excursion to Kilkenny, I said, "How did these men feed and wherewithal?" I found, sir, no mention of decanical hospitalities at St. Canice's that I looked for, I liked the notice of the brewery, but ultimately I find the dinner at the club-house dismissed as "tolerable." Tolerable! was it worthy of no higher praise than this? I tell you at once, sir, I don't believe it, or else—but I will not express the unworthy thought, for I cannot believe that the architects of Ireland love a good dinner less and money more than their brethren all over the world, who have had what honour my poor society confers in many a summer day's excursion.—I am, sir, your obedient servant,

EPICURUS ROTUNDUS,

(Late correspondent of a weekly paper).

[The above communication has been duly referred to the chronicle of the excursion to Kilkenny, who, it is but candid to state, has spoken with some un-called-for warmth on the subject of our correspondent "minding his own business." "Does the man," he indignantly enquires, "want me to have described the dinner as *in-tolerable*?" for, if he does, "I decline to do anything of the kind." "Good wine needs no

bush," he says, and Mr. Morris' excellent catering for the excursionists required no puffing from him. "*Tempus non eget—istis defensoribus*," he grandly adds, but whether he is pleased to refer to himself, or our correspondent, E. R., or both, it passes our comprehension to say. The most intelligible part of his communication is a hearty tribute to the good dinner which he had at the hands of Mr. Morris, well and promptly served, and the incredibly modest score which he had the pleasure of inspecting. He has been diligently endeavouring to perpetrate an adaptation of the famous lines—

"Whenever you go to Kilkenny,

Remember the hole in the wall,"

to suit the occasion, but has had to give up the word "Club-house" as un-metrical and not to be interpolated into the lyric at any price.—Ed. D. B.]

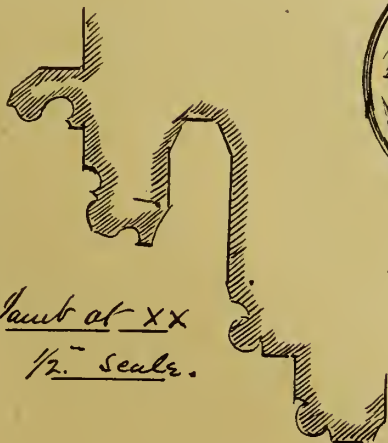
MINING COMPANY OF IRELAND.

THE half-yearly meeting of the above company was held on the 5th inst., when the following report was read:—"The annexed statement of account exhibits a net profit of £7,664 15s. 5d. on the company's operations during the past half year. At Knockmahon Mines 2,929 tons of copper ore were raised, compared with 2,831 tons in the previous six months, and 3,214 tons in the corresponding period of 1865. The quantity shipped was 1,899 tons—value £13,305; and the net profit was £3,854 13s. 4d. The Luganure Mines produced 742 tons of lead ore, compared with 724 tons in the previous half year, and 765 tons in the same period in 1865. The quantity of ore delivered to the Ballycorus works was 713 tons—value £8,348 16s. 4d.; net profit, £1,045 18s. 5d. The output of coal and culm at Slievardargh Collieries was 23,759 tons compared with 23,826 tons in the corresponding period of 1865. The sales were 21,873 tons, compared with 20,623 in 1865; net profit, £1,729 9s. 3d. At Duhallow Collieries the output of coal and culm was 4,449 tons, and the sales were 4,106 tons. The output in the corresponding period of 1865 was 1,852 tons, and the sales 1,849 tons. The profit on the working has been £382 6s. 3d., which has been carried, as heretofore, to the credit of the new fittings account. The profit on the operations at Ballycorus works has amounted to £1,782 3s. 5d. which includes £700, the estimated value of the flue dust from the new flue, applicable to this half year. At Corrig Castle Mill, county Waterford, there has been a profit of £69 10s. 1d. on the working of the half year. The directors recommend a dividend at the rate of 11 per cent. per annum, free of income tax, payable on and after Monday next, the 9th instant.

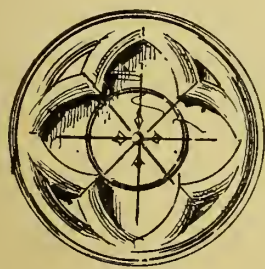
THE HEALTH OF DUBLIN.

(From the Registrar General's Weekly Return.)

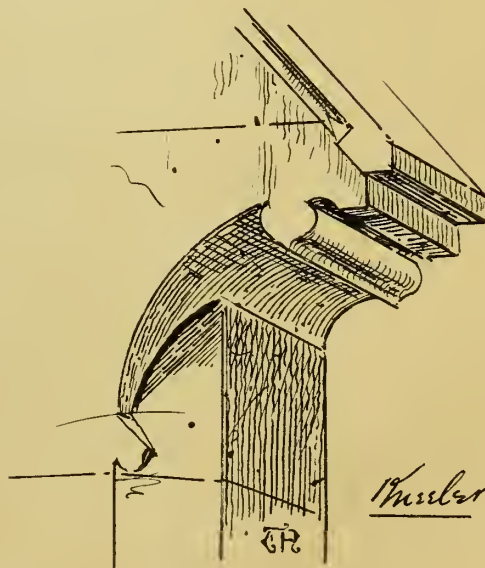
In the Dublin Registration District the births registered during the week ending July 7th, amounted to 178—82 boys and 96 girls. The number in the corresponding week of last year was 166. The deaths registered during the week were 123—63 males and 60 females. In the corresponding week of last year the number was 95. Nine deaths resulted from fever. Scarlatina caused one death. Three deaths from whooping cough were registered. Diarrhœa caused 1 death. Seven deaths were caused by convulsions. Thirteen deaths were attributed to bronchitis. Pneumonia, or inflammation of the lungs, caused 6 deaths. Eleven deaths resulted from phthisis or pulmonary consumption. Apoplexy proved fatal in 2 instances, and paralysis in 4. Seven deaths were the result of heart disease. Cancer caused seven deaths. Three accidental deaths were registered—one that of a boy, who died from the effects of a burn; two from drowning; a sailor from injury of the spine; and six who were burned by fire in Westmoreland-street. The deaths registered in No. 1, North City District (Summer-hill), afford an annual ratio of 20 in every 1,000 of the population—the Mater Misericordiæ Hospital is situated in this District; in No. 2, North City District (Coleraine-street), which includes the Rotundo Lying-in Hospital and Jarvis-street Hospital, the deaths registered amounted to 6 per 1,000; and in No. 3, North City (Blackhall-street), to 36 per 1,000—the North Dublin Union Workhouse, the Hardwicke, Richmond, and Whitworth Hospitals, and the Richmond District Lunatic Asylum, are situated in this District. In No. 1, South City District (Meath-street), which includes the South Dublin Union Workhouse, the Cork-street Fever Hospital, and Steevens' Hospital, the deaths registered afford an annual ratio of 46 per 1,000; in No. 2, South City District (High-street), the ratio was 20 per 1,000; in No. 3, South City District (Peter-street), which includes the Coombe Lying-in Hospital, and the Meath, the Adelaide, and Mercer's Hospitals, it was 14 per 1,000; and in No. 4, South City District (Grand Canal-street), in which Sir P. Dun's and St. Vincent's Hospitals are situated, it was 23 per 1,000.



Joint at XX
1/2" scale.



Quatrefoil.



Finial.

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HINTS ON MODERN CHURCH BUILDING.*

A CHURCH should not be designed merely with a view to utility; but should, also, possess a monumental and typical character. Representing the religious faith of its congregation, it should be as worthy of its destination as the means at command will permit. The social position and wealth of the worshippers, and the nature of the locality, will govern the amount of architectural display that should enter into the design. But whether the means at command are large or small, the question "what is required?" should, in every case, be fairly put and answered; and the exigency should be met without any blind craving for a "handsome elevation;" or for certain architectural features which are popularly, though, as I shall proceed to show, incorrectly supposed to be essential to a church. One source of error and confusion is the handsome picture of the proposed church, which an architect thinks it necessary to prepare, or rather to employ an artist to prepare. This is shaded, and tinted, and coloured, and framed; and is found to work powerfully on the minds of all committee men and churchwardens. Your church may be destined for the crowded city street, or, it may be intended as the sole ornament of a desolate brick field in some painfully new suburb; but, in either case, you will find, in this artistic representation, clusters of foliage forming a background for the imaginary church, of which sun-light on some parts, and shade on others, are devised to tell their tale of boldly cut and deeply recessed stone work. Over all rises a broach-spire piercing far into a blue sky, the birds wheeling through which are meant to be suggestive of aerial height, and of a clangour of bells. In the foreground is seen the inevitable prancing horseman, without whose presence no building can be artistically sketched. We cannot disguise the fact that the finished church sometimes proves rather disappointing, not so much because one aisle, or the tower, is left incomplete (for want of funds); but because it all looks new and cold, and there is no foliage near, and blue sky is, alas, too rarely seen in our climate. The inside, too, does not quite gratify one, for it presents dull expanses of plastering, through which blow unaccountable drafts. In summer-time new churches are usually too hot; in winter they are too cold. The "warming apparatus" is frequently out of order; and, as to the acoustic properties of the building, we are painfully reminded that few definite principles have hitherto been arrived at on this subject. Men of science cannot yet tell us clearly why it is easy to hear under one roof, and impossible under another.

I venture to think that in church building there is not a sufficient study bestowed on the actual requirements; and, perchance, too much study bestowed on a visionary perfectness of plan. When a man of ordinary common sense goes in quest of a house or a carriage, he insists on something which satisfies his own consciousness of his own want. But when a congregation, or rather a committee, set to work on the building of a church, their common sense is too often banished, driven from the field, overwhelmed by the desire of their architect to combine a very small imitation of a spire from Salisbury, with miniatures of windows from Lincoln, adding, it may be, a porch from Norwich, and some faint resemblance of a west front from Exeter. In short, the originators of the edifice, who are in utter ignorance of the work in hand find themselves, face to face, with a professional gentleman whose studio is well-stored with architectural precedents; and who, as a man professing art, is anxious to copy from good examples; while as a man of science he has a bent for making interesting experiments; and it would not be fair to a profession for which I have the utmost respect, to omit this—that the architect's intentions are not only frequently interfered with by the unreasonable demands of his employers; but that they are still more frequently hampered by economical considerations which result too often in the spoiling of an excellent design, and the omission of parts which are absolutely necessary to the harmony and completeness of the work.

The site should materially influence the form of the

church. Much should depend on whether the ground is high or low—on its configuration—its position with regard to buildings, and on the amount of open space in front. Some investigation into the ground plans of ancient churches will lead to this conclusion—that *a church may be built of almost any shape*. No particular form is necessary; and no single architectural feature is absolutely required in church building. A visitor to the churches lately built would conclude a spire to be a matter of strict necessity; but this is altogether a delusion. Spires were of undoubted use in the flat eastern counties of England, where trees concealed the buildings, and where, in the absence of any roads, the peasant tending churchwards might well miss his devious path, unless guided aright by the spire. But to rush to the conclusion that a spire is universally necessary is to ignore the teachings of travel and the dictates of common sense. As a rule the old city churches do not possess spires; and, in some entire counties (as Somersetshire), there is scarcely a spire to be found. It has been stated by some writers that a spire is the necessary termination of a tower. This is another delusion which enlarged observation will dispel. Towers may be found all over Christendom, erected partly as ornaments, but more especially erected as receptacles for bells. If a peal of bells be not appreciated, at least one bell should be found in every church; and it is not difficult to accommodate one bell, either in a small lantern-like open-work tower or in a simple and earlier style be selected, in a bellcote, which is the most appropriate western or central ornament of any church of the smaller size; or, again, in the aspiring and graceful flèche which affords great scope for the taste of a true architect, and the effect of which may be so striking as to exemplify as nothing else can the marked results of real genius operating on scanty materials. The spires we see springing up in the suburbs of this and of other cities, seem to be simply bad copies of undistinguished originals. No architectural feature seems less indicative of originality of thought than the small broach-spire cheaply built. I can recall but one very modern spire, that of "All Saints," in London, which speaks strongly of artistic power. Although a spire is by no means essential to the beauty of a church, it may, under some circumstances, become necessary to the design. In Rutland-square, Dublin, for example, the lofty houses would dwarf down the new structure at the corner, even to insignificance, were it not for the spire, which here becomes indispensable. The same remark applies to a peculiarly graceful spire which rises at Lancaster Gate, Hyde Park, London, from the midst of new buildings of six or seven stories high, among which the church would, but for its lofty spire, appear submerged.

Another architectural delusion is, that a church should, in all cases, be built east and west. In Italy no such rule has ever existed. In Western Europe "orientation" has always been more regarded; but our ancient churches were built when the ground was clear; and compliance with the rule was as easy as non-compliance. Our case is different. Some suburb increases and requires a church; and it is quite a chance that the angle of ground procured as a site, suggests or even admits of "orientation." Common sense should tell the architect to adapt the building to the ground, and not to sacrifice anything for the sake of complying with an unmeaning usage. The new church of St. Andrew, Dublin, illustrates my meaning. The desire of building in the form of the Latin Cross, due east and west, has not led to the most satisfactory result. If the shape and the position of the edifice had, on the contrary, been suggested by the site and by the traditions of the old church, the new church might have been more remarkable as an ornament of this city. The tradition of the spot suggested a "round" or octagonal church; and the intersection at Ely Cathedral and the Round Church at Cambridge, might have taught a useful lesson to a designer who, in the true spirit of Gothic art, depended more on himself than on conventional forms and maxims. The worst result of this copying of ground plans is that half our new churches are servile reproductions, resembling stunted cathedrals. I confess to a feeling of disappointment on visiting the new churches of St. James and St. Jude, westward in this city. The

Ecclesiastical Commissioners have improved, but they appear still to build churches in conventional forms, as though they were designed at so much the dozen.

The architectural delusion that the form of the Latin cross is the proper form, should be dispelled by such famous buildings as the Sainte Chapelle, at Paris, the Temple Church, in London, a score of beautiful college chapels, and numerous others. Side aisles were required chiefly for processional purposes, and should never be introduced in an Anglican church, unless required for the support of the roof. The Church of St. John, Sandymount, affords an example of a small edifice beautifully designed, but on a scale so small as not to justify the heavy arcades which shut out a large portion of the congregation from view. It is true that a large proportion of the ancient English churches, and even many of the smaller kind, have side aisles, but this is accounted for by extensions which have been made; and it is worthy of remark that in hundreds of instances the aisle will be found on one side only. The notion of symmetry, or balancing of one side against another, had little influence on the Gothic builders. An useful hint may be learned from their practice of enlarging a church. In a new and rising suburb a church should always be so built as to be capable of extension. I do not see how the churches at Sandymount and Elgin-road could be enlarged without utterly spoiling them. On the other hand, some of the churches near Dublin (e.g., St. John's, Monkstown, and St. Mary's Donnybrook) have been enlarged by the addition of transepts without detriment to their appearance. A church intended for four or five hundred worshippers is spoiled by containing too many parts. It should take the chapel form, or that of the Basilica: the latter in case the width requires the support of pillars. But pillars can frequently be dispensed with; and we have arrived at an epoch in the history of the Church when it is desirable to multiply small churches, rather than to compel persons to traverse long distances in quest of large ones.

Another delusion, but less prevalent in Ireland than in England, is that there should be a large rectangular chancel, of the form used in old times when choral service was performed by a large clerical or monastic staff who usually occupied two or four rows of stalls. All that is wanted is a shallow space sufficient to contain the altar and seats for, at the utmost, four clergy—no more is required for Eucharistic purposes in the Anglican church. There is no reason why the chancel should be a large rectangular appendage to a church; and common sense at once selects the semi-circular form, or that of the apse, as not only hallowed by the recollection of its use in the early church, but as being in this age more appropriate, and intrinsically more beautiful. The chancel should be as high as the rest of the church, to imply that the special purpose to which it is adapted is (to say the least) not less honourable than that for which the rest of the building is designed. If any one doubt whether a shallow chancel in polygonal or apsidal form be sufficient, even for a very large church, let him visit the Dominican Church in Dominick-street, and compare that with the stunted cathedral which he will find in the *Illustrated News* so often, and in the architectural drawings—that well-known church with little gables and little transepts and petty windows and a commonplace spire. The Dominican Chapel is a noble and perfect building, and a chief ornament of this city: it is built in the exact form of the Roman Basilica—the earliest Christian church—it is not cruciform, and has neither chancel, tower, nor spire.

Another consideration too often overlooked is appropriateness to position and climate. Most of our new churches have large west doors, for example. The meteorological tables inform us that in Ireland there is a westerly wind blowing for four days out of five, consequently the west door cannot be used without the utmost inconvenience; and it is often disused and covered up with a curtain, or with an unsightly wooden box. I have even seen brown paper pasted over the inside of a west door to keep out the gusts of wind. Why not dispense with it, and place porches north and south, in themselves highly ornamental features? Here again we have the feeble imitation

* Extract from a paper read last month at a meeting of the "Fortnightly Club" in this city, by R. Denny Urlin, Esq., Barrister-at-Law.

of the cathedral form blindly followed. A great western doorway was usually placed in a cathedral for solemn entrance by high ecclesiastical or civil authorities in processional state. But in the best English cathedral (Salisbury) a north porch is evidently the principal entrance. The error adverted to is avoided in the beautiful church of St. Bartholomew, now approaching completion, at Elgin-road, near this city.

On the great question of style I shall say but little. It seems now agreed that ecclesiastical (if not secular) edifices should follow the best and purest Gothic style that prevailed in the north of Europe, circa Edward I. But if we may be so bold as to look forward for a generation, and hazard a prophecy, it is that many ideas will be borrowed from the south of Europe; and chiefly this—that the round arch is, especially for doorways, not only admissible but appropriate. The architecture of the future, if the art continue to improve, and be not debased through servile copying without thought or progression, will combine the use of the round and the pointed arch. Each may be used with advantage in its proper place; and in the cathedrals of Chichester and Dublin (St. Patrick's) we actually see the combination. Norman building is just now little admired: but a solid round arch style has in itself elements of permanence, and so long as the world lasts will more or less prevail; and we shall yet see churches built not with the clumsy columns of the nave of Durham, but with the graceful shafts and effective round arches, highly adorned, of the "Galilee" of Durham, a structure which deserves the careful study of every architect who wishes to receive, and is able to develop, a good idea. I hope to see the day also when the use of plaster will be discontinued, and the inner surfaces will consist of brick with as much variation of pattern and colour as may be consistent with good taste; and as large an intermixture of marble, alabaster, and slate as the means at command will justify. There is a special fitness for the use of coloured marbles in Ireland and Scotland, where they are found in such beautiful variety. We may also look for the increasing use of iron and other metals for every purpose, structural and ornamental; and here is considerable scope for ingenuity and good taste. Doubtless if the architects of the 12th and 13th centuries had the command of all these new found materials they would have fully developed their use; and this is the answer to a feeble objection sometimes urged against the use of new materials and new processes in architecture.

In so brief a criticism of so vast a subject, especially when my own pursuits lie in a different direction, there is considerable danger of misapprehension. I therefore briefly recapitulate and sum up as follows:—A church should not be built from books, but should be the product of a cultivated taste, allied with practical common sense. If funds are abundant, and a large congregation has to be accommodated, the complete cruciform church, with lofty spire, and every accessory may be built; but this should be handsomely, not sparingly, done. But under usual circumstances the edifice required is a small one, for which the chapel form should be taken, all the architectural features being suggested by the exigencies of the case. *Architectural genius is chiefly shown in surmounting obstacles.* The peculiar glory of Gothic is that such obstacles as bad situation and scanty funds may be surmounted,—but this can only be successfully done by means of thought, industry, and a cultivated taste. With these a small chapel may be a beautiful object, stamped as clearly with power as an Indian-ink drawing by Turner, speaking as distinctly to you as the slightest sketch of a great master in painting. It may, although slight, be in itself worthy of study and admiration. When a true artist gets to work, he does not copy a face from Raffaele, and an arm from Michael Angelo. Let the architects give up copying, and draw from their own resources more largely, and their art will possess more power and vitality. Above all let them cease from telling us that these commonplace structures rising up around us are amply excused by "want of funds," when their deficiencies really proceed from want of thought. The extent to which the excuse is urged, and is received, only proves a general ignorance among

educated people of the principles of the noblest of the fine arts. Let us hope for a better knowledge of architecture among the educated classes, not only because it would improve the taste, and unfold new sources of pleasure for those who stay at home, but would largely increase the delights of travel for those who go abroad.

DWELLINGS FOR THE WORKING CLASSES.

To the *Builder* we are indebted for the following outline of the bill brought in by Mr. McCullagh Torrens, Mr. Locke, and Mr. Kinnaird. It is very much to be desired that the provision of some such bill duly amended and revised should be extended to Ireland.

The bill, amended from that of which Mr. Torrens was the original promoter, consists of forty-four clauses, and two schedules. The preamble states that "it is expedient to make provision for taking down or improving dwellings occupied by working men and their families, which are unfit for human habitation, and for the building and maintenance of better dwellings for such persons instead thereof." The act is to apply to all places in the United Kingdom, which are boroughs, or burghs, or which are comprised under certain Acts, such as "the Public Health Act, 1848," and "the Local Government Act, 1858." The most important clauses provide, that the "Officer of Health," under the Act, on finding any street or premises in a condition prejudicial to health, shall report that the powers of the Act ought to be enforced, and whether the defects may be remedied by structural alterations, or by demolition; and, similarly, that he is to inspect and report in the event of a representation made to him, by four householders, that contagious disease exists or is likely to be engendered in a house. Copies of the Report are to be delivered to the Clerk of the "Local Authority" and the Clerk of the Peace. The former of them is to transmit a copy to the owner of the premises, and to give him notice that the Report will be considered by the Grand Jury, or in Scotland by the Court of the Burgh-Magistrates, before whom it is to be laid by the Clerk of the Peace. The Grand Jury, or Burgh-Magistrates, are to take the Report into consideration, viewing the premises if they think fit, and are to make a presentment or order thereon, according to what they may consider the requirements in the case; and a copy of the order is to be sent to the Local Authority. This latter authority, on the receipt, is to cause a survey to be made, and to have prepared a "plan and specification of the works (if any) required to be executed." The Clerk of the Local Authority is then to give notice to the owner of the premises, of the order by forwarding him a copy, and informing him "that a Plan and Specification of such works as are required in reference thereto has been prepared, and that such plan and specification may, if such owner think fit, be inspected and transcribed by him or his agent at the office of the Clerk of the Local Authority without charge": within fourteen days after receipt of the notice, the owner may state any objection that he has to the proposed method of executing the works; any matter in difference is to be settled by two justices, who may make such order as they may think fit (or one that might involve alteration in the plan and specification); and the plan and specification, amended or approved of, is to be that according to which the works are to be executed. There are certain provisions for appeal by the owner against the order or presentment; but the clauses following them require that within three months the owner shall signify whether he is willing to effect the works, or whether he requires the Local Authority to purchase the premises. Should the owner, electing to effect the works, not commence them within two months, and complete them within the time mentioned in the specification, the Local Authority is to execute them, and recover the amount. If the owner do not elect to effect the works, or should he require the Local Authority to purchase, then if the amount be not previously agreed upon, a valuation of the premises including the site is to be made by two able practical surveyors, not officers of the Local Authority; and notification is to be made to the owner, of the willingness of the Authority to purchase at the amount of the valuation. If the valuation be accepted, the premises are to be conveyed: if not accepted, the amount is to be assessed by a jury; and upon payment or tender of the money, the corporation or Local Authority may enter upon the premises and execute all the works required by the plan and specification. There is, of course, provision for cases where there are two or more owners, as also for determination of tenancies.

Where total demolition, rather than improvement of premises, is required, compensation is to be given

for the damage that may be sustained, including value of the premises and the site,—unless the owner desire to retain the latter, subject to the provisions in the Act with reference to the use. A house that is required to be merely improved, may, if preferred by the owner, be taken down, instead of the works required by the plan and specification being effected; but in every such case, as well as in the other, or the event of the owner retaining site of premises totally demolished,—

"... no house or other building or erection shall at any time thereafter be erected on all or any part of the site of the premises so taken down, without the previous consent of the Local Authority, and in accordance with plans and elevations previously approved by them; and they may at any time, at the expense of the owner thereof, abate or alter any house or other building or erection at any time wholly or partly erected contrary to the provisions of this section."

Property acquired by the Local Authority, under the Act, is to be held upon trust to carry into effect some one or more of the purposes of the Act. These are to be deemed to be:—

"First, the providing, by the construction of new buildings, or the repairing or improvement of existing buildings, the labouring classes with suitable dwellings situate within the jurisdiction of the Local Authority:

"Second, the opening out of closed or partially closed alleys or courts inhabited by the labouring classes by pulling down any building, or otherwise leaving such open spaces as may be necessary to make such alleys or courts healthful."

But subject to the trust, the Local Authority may sell, exchange, lease, or otherwise dispose of acquired premises. An account of what has been done is each year to be presented to the Secretary of State. A special clause allows the Local Authority to make contracts for building, lighting, and supplying with water. Another allows them to make bye-laws for regulation of the dwellings belonging to them, and to recover penalties for breach of such laws. Other clauses refer to local rates for purposes of the Act, and to loans from the Public Works Loan Commissioners on mortgage of the buildings, and sites, or of the local rate: but the rate is not to exceed threepence in the pound in any year: and proceedings are not compellable to be taken by the Local Authority, for purchase of any premises, in cases where the Public Works Loan Commissioners are not authorised to make a loan on account.

Description of what is meant by the term "Local Authority," is given by the first schedule, along with designation of the places to which the Act is to apply. In London, the Local Authority would be the Commissioners of Sewers of the City, or the Metropolitan Board of Works: in the boroughs and generally, it would be the Town Council, or the Commissioners under general or local Acts; or, as in places within the jurisdiction of Boards constituted under the Public Health Act 1848, and the Local Government Act 1858, or one of them, it would be the Local Board. The form of presentment, in the second schedule, by the Grand Jury, designates the particular premises "specified in the report of the Officer of Health" as unfit for human habitation, and says that they ought to be improved, or demolished (as the case may be), "in pursuance of 'The Artisans' and Labourers' Dwellings Act 1866.'" The term "Officer of Health" is to mean and include Medical Officer of Health, Sanitary Inspector or Inspector of Nuisances, or any other officer performing duties analogous to those under the Act of 1858, or under the Metropolitan Local Management Act, or under the Acts with similar objects, as the Police and Improvement Acts for Scotland and Ireland.

The *Builder* adds, "It is not clear that the Bill does not make one great omission, namely, in not providing for the inspection of buildings by those who alone would have the knowledge requisite for saying whether the defects could be remedied by structural alterations, and in leaving the actual decision upon 'the plan and specification' to the magistrates unadvised,—since the services of practical men 'surveyors,' are required to be obtained, it would appear, only in the event of a valuation. In working the Act, of course such an omission might be remedied; but it requires now to be pointed out. The Metropolitan Medical Officers are so far qualified for their duties, that any one with the knowledge that an architect possesses might well be indebted to them for valuable hints and for positive information; but no Medical Officer or Inspector of Nuisances is competent to decide what particular structural measures will meet his object; and the sooner our legislators are disabused of the notion that the functions of one profession, specially educated, can be safely entrusted to another profession, the better will it be for the general end in view."

A useful cement is made by taking two parts of finely-sifted unoxidised iron filings, mixing them with one part of perfectly dry and finely powdered loam, and kneading the mixture with strong vinegar until a perfectly homogeneous plastic mass is formed, when the cement is ready for use. It must be made as wanted, for it quickly hardens, and once set is never fit for use again. The cement is said to resist fire and water.

ON THE TRUE NATURE OF THE DECAY OF STONE IN LONDON, AND MODES OF PREVENTION.*

(From the *Practical Mechanic's Journal*.)

It is a somewhat strange thing to say, but it is nevertheless a fact, that the vapours emanating from the crater of a volcano, and those sent forth from a great city, are very much the same, especially if it be like London, a coal-burning city. And as are the the splitting and eating away and dissolvent power of the *solfatara* or the *fumarole*, in effects upon the surrounding rocks and stones, so are those of the gases and vapours given forth in great cities upon the building stones of which they have been constructed—effects, indeed, by no means limited to building stones.

Let us examine this a little more narrowly, for it is very curious to remark what an amount of inexact half knowledge appears to prevail on the subject of the causes of the decay of stones in London, even amongst professional architects, and hence in part it is that *charlatanerie* has been in the ascendant in providing *nosstrums* for the supposed preservation of stone, as in the Houses of Parliament, and not of stone there only but of iron supposed to be protected by Mr. Szerelmey's *granitic coating*: the real value of which any one may see on looking up at the rusty iron plates of the roof of the clock tower, when they are dry and the sun shining on them.

In a clever paper by Mr. I. D. Matthews, A.R.I.B.A., on the materials most appropriate for London exteriors, in the January last part of a contemporary journal, we have the following exposition as to the nature and causes of the decay of stone in London:—

"The chief reasons why the atmosphere of London is so destructive to stone and other materials, are, that a great quantity of carbon and sulphur is discharged by the lungs of the inhabitants, and by fires (the combustion of coals for the latter exceeding three million tons per annum in London); the soot readily adheres, and if not speedily removed, soon commences the work of decomposition. The removal is scarcely ever attempted, except by rain, which in its downward course is affected by the solid substances floating in the atmosphere, soluble in water, and generally containing carbonic acid gas, sulphuric acid gas, and sulphate of ammonia, which together form a coating which soon acts on the cementing medium of the stone. The more absorbent a stone is, the sooner it will decay, as in winter especially it holds the water, which soon freezes, and in the expansion incident thereto breaks the stone to pieces. Much decay may be prevented by protecting the more exposed projections by lead, and in occasionally washing by the hose of a fire-engine, or otherwise, the more sheltered parts, which generally decay the soonest, as the sooty incrustation is seldom disturbed by the wind or weather."

Now this, without being quite wrong, is very far from being quite right—even to the slight extent to which it goes into the subject.

In August, 1861, the Report of the Committee on the decay of the stone of the Houses of Parliament, was printed by order of the House of Commons. This committee, appointed by the First Commissioner of Works, Mr. W. Cowper, and presided over by Sir Roderick I. Murchison, had upon it six architects, two civil engineers, two professors of geology, and three chemists, Dr. Hoffman, Dr. Frankland, and Mr. Abel. They examined a good many witnesses, from the majority of whom they got singularly little information of the least value, and their general report does not amount to much more than the expression of their opinion, that "the discovery of a proper mode of treating stones in a state of decay has not yet been made." They did, however, one piece of good service in putting upon the rack of questioning the Dowsterswivel who, by some occult and hack stair's influence in "illustrious" regions, had been foisted upon the late Sir Charles Barry, and installed in "his laboratory" in the Houses of Parliament, as the man, and the only man, to save them from destruction by "zopissa" and "asphaltum," from the Dead Sea and the Red Sea, "obtained by correspondence with a gentleman who sends it"—but had no name—and "several other things brought from Egypt" by Mrs. Harris.

Any one who will read through self-contradictory evidence here on record from the lips of M. Szerelmey, can only feel amazed at how it is that in England, men such as this "ingenious foreigner" get pitchforked into place and pay, and are enabled for a time to meddle with and muddle the gravest public interests.

Well might the committee express its opinion,

* It is only fair to state that this article appears specially directed against the preservative (?) known as "Szerelmey's process." We have omitted some passages which, being somewhat of a personal character, appear to us to give the writer's remarks an *ex parte* aspect. At the same time we would be sorry to be mistaken to be advocates of the efficacy of "Zopissa."

"that while they can offer no opinion on processes kept from their knowledge, they doubt the applicability of any suggestion that would demand the veil of secrecy for its protection."

It is not uninteresting to remark, in the evidence given by several eminently *practical* men, whose general information and truthfulness are worthy of all respect, how singularly devoid of the power of exact observation as to minute facts having a scientific bearing, some of them prove themselves. Thus Mr. Thomas Piper, the senior partner in the eminent building firm of Thomas Piper and Son, having given a good deal of curious information as to the decay of Portland stone at the Custom House and Mansion House, where he has been engaged, gives it as his conviction, that *the lodgment of soot* is the main cause of the decay of stone in London, "because it is where the soot lies and gets occasionally saturated with the moisture of the atmosphere that the chief mischief arises" (No. 1425 Report); and also announces the startling doctrine, that the formation of sulphate of lime by the rain acting upon the stone and washing the soot off, forms a staccatitic skin or coating, which is a very perfect protection to the stone (No. 1496, Report), although upon the Portland stone statues of the Mansion House, this perfect protection unfortunately presents itself in the character of "a cutaneous disease" (No. 1493, Report). Now any one who passes St. Paul's upon the south side, sees at a glance that nearly its whole flank is uniformly as black as a pot with soot, and yet it is the best preserved side of the whole edifice; and if a careful examination be made of the whole exterior, it will be found that the decay is greatest on the north and east sides, and is greatest at those parts of the exterior, and on those sides where the stone is oftenest wet and dry, and longest kept damp by want of sun and air, and where the winter frosts get most at the stone.

While soot or its rain washings are undoubtedly destructive agents to calcareous stones in London, there are other agencies *unceasingly* at work in the same direction, of immensely greater power, and to these it is that we purpose presently to direct attention, inasmuch as they really seem up to the present hour to have received no exact notice or interpretation. That we may not appear guilty of egotism in this, we subjoin an extract from the Report of the Committee of the three able chemists who were of its members, and who were requested to submit "their opinion on the nature and causes of the decay of building stone generally, and in particular that of the Houses of Parliament."

The chemists of the Committee (Report, Appendix, pp. 96-99) divide building stones at large into only two classes—1st, Of materials not easily acted on by acids; 2nd, Of such as are partially or entirely acted on by acids with facility—and thus proceed:—

"Regarded from a purely chemical point of view, the difference in the resisting power to corrosive agents of different stones, would appear, at first sight, to depend entirely upon their chemical composition; but even a moderate acquaintance with the properties of the components of such building stones demonstrates that there other conditions at least equally instrumental in determining the degree of permanence of different stones.

"It is a well-established fact, that *the same* chemical substance exhibits, in different conditions, a great variation in its behaviour with chemical agents. Numerous examples might be quoted in illustration of this. Thus marble and chalk are chemically identical, but owing to the difference in their physical structure, the one being crystalline and the other amorphous, the former is much less readily acted upon by acids than the latter. Again, artificial peroxide of iron is readily soluble in acids; peroxide of iron, in the form of hæmatite, is attacked with difficulty by acids; and the same oxide, after exposure to a powerful heat, is almost entirely insoluble in acids. The influence of aggregation in these instances, and in numerous others which might be quoted, is obvious and generally admitted by chemists, however different and imperfect may be their views regarding the connection between physical condition and chemical effect.

"The observations just made regarding the behaviour of substances, such as enter into the composition of building stones, cannot but apply with equal force to the aggregates of such components—to the building stones themselves.

"The atmospheric influences to which building stones are subject are many of them essentially chemical actions, involving processes analogous to, or identical with those performed in the laboratory, although, from the extreme dilution of the chemical agents, as existing in the atmosphere, they must necessarily be of a very gradual character.

"There are few instances in which the influence of the state of aggregation upon the permanence of a building stone is more apparent than in that of the dolomitic limestone, used in the construction of the new Houses of Parliament. Here, in one and the same block of stone of comparatively small dimensions, we

find certain portions of the surface powerfully disintegrated, while others appear in a perfectly sound condition. Chemical analysis has hitherto failed to establish any important difference in the composition of sound portions of such stones, and those parts which are subject to decay; it is, therefore, legitimate to attribute the unequal permanence of the stone, under atmospheric influences, to such structural differences as may be comprehended under the term, state of aggregation.

"Before proceeding to an examination of the particular character of the decay observed in the stones of the new Houses of Parliament, it may, perhaps, be desirable to glance at the nature of the changes to which building stones generally are subject under atmospheric influences. Under normal conditions these changes must be ascribed to the action of the oxygen, carbonic acid, nitric acid, and water in the atmosphere. In the air of towns, however, there are certain other constituents, such as several acids of sulphur, and occasionally hydrochloric acid, which cannot fail to exert an additional disintegrating influence upon building stones.

"The action of oxygen must be of comparatively a subordinate character, its effects being confined to constituents which occur but rarely, and generally in limited proportions in building stones; such as the sulphides of iron, and the protoxides of iron and manganese; these compounds being very prone to oxidation, would tend to disintegrate the stones by the absorption of oxygen. Of far greater importance are the effects of carbonic acid and water. Carbonic acid in the presence of water, is a powerful solvent; it not only corrodes the calcareous and magnesian carbonates (more or less powerfully according to their state of aggregation), whether they form the principal constituents of the stone, or are only present as cementing materials, but is capable even of attacking and gradually decomposing the hardest and most indestructible rocks.

"In the case of the calcareous and magnesian constituents of stone, carbonic acid acts by transforming the insoluble earthy carbonates into soluble bicarbonates, which are thus removed from the substance of the stone; whilst its influence on silicious rocks consists in the elimination of the alkaline bases, in the form of carbonates, and the separation of the silica in a more or less friable condition. The weathering of granites, and their gradual transformation into the several varieties of porcelain clay, affords an interesting illustration of the latter kind of action. In the changes just mentioned, the carbonic acid and water are equally concerned; the water serving not only as a vehicle for the introduction of the carbonic acid into the pores of the stone, but also as a solvent for the products of its action. There are changes, however, to which building stones are subject, in which water is the sole agent, and which are more of a mechanical than of a chemical character. The expansion which water undergoes on freezing, and the irresistible force which it then exerts, are well known; it is obvious that water freezing within the pores of a stone must exercise a disintegrating action not less powerful than those above referred to.

"Recent researches have demonstrated that nitric acid is a frequent and, perhaps, even a normal constituent of the atmosphere, and, as such, must undoubtedly assist in the destruction of magnesian and calcareous stones; but the proportions in which this acid has been found are so minute, that it need not be dwelt upon as an important destructive agent. This remark, however, does not apply to the acids referred to above, as existing in the atmosphere of towns. The quantity of sulphur acids in the air of towns, where a considerable amount of coal is consumed, is quite appreciable. According to the determinations of Dr. Angus Smith, the air of Manchester contains an average proportion, corresponding to one part of sulphuric acid in every 100,000 parts of air, which, in the centre of the town, rises to 25 parts in 100,000. No numerical data exist with regard to the proportion of sulphur acids in the London atmosphere, but it can scarcely be doubted that, in the neighbourhood of the new Houses of Parliament, they are present to an extent equal to the average amount found in the Manchester air; they must, therefore, be regarded as among the more important agents destructive to stone, which are present in the London atmosphere.

"A few observations remain to be offered regarding the particular nature of the decay manifesting itself in some of the stone of the new Houses of Parliament. It has already been pointed out that, so far as our experience goes, we are inclined to attribute the local character of the decay to structural differences, obtaining in different parts of the stone. The general structure and the composition of the stone in the new Houses of Parliament, render it moreover amenable to all the sources of disintegration which we have above enumerated, with the exception, perhaps, of oxygen, which can scarcely produce any appreciable alteration in dolomite. Thus, the chemical action of carbonic and sulphuric acids, in combination with water, will gradually dissolve and remove the carbonates of lime

and magnesia, whilst the porous nature of the stone renders it liable to the mechanical effects of water under the influence of frost. The presence of sulphuric acid in the air of towns appears, in the case of magnesian limestone, to bring into play another process of destruction. This acid not only corrodes and renders soluble, as we have pointed out, the earthy carbonates (in which respect it resembles carbonic acid in its effects), but, forming with magnesia a ready crystallizable salt, the well-known sulphate of magnesia, remarkable for the large proportion of water of crystallization which it fixes, it gives rise, in addition, to a mechanical destruction of the stone precisely similar to that produced by freezing water. The powerful mechanical effects resulting from the solidification of water, induced by crystallization, are well known, although it would appear that they have not hitherto been sufficiently appreciated as auxiliaries in the process of disintegration of stone. The analogy between the solidification of water, by freezing and by crystallization is perfectly obvious, and a French chemist has suggested, as a means of recognizing stones liable to disintegration by frost, to immerse them in a solution of sulphate of soda, and to note the subsequent effects of its crystallization within the stone.

"We have ourselves recently had occasion to observe some phenomena which go far to elucidate these destructive effects of crystallization. The exfoliations exhibited by many of the stilet vases deposited in the British Museum, were found to be due to the formation and crystallization within the substance of the vessels, of nitrate of lime. Again, in experiments on the preservation of fabrics by impregnation with saline substances, it was found that the crystallization of sulphate of magnesia within the material, produced a disintegrating effect upon the fibres, sufficient greatly to weaken the material.

"In conclusion, we would remark that the effect attributed to the crystallization of the sulphate of magnesia, in assisting the decay of dolomitic stones, and more particularly of those used in the construction of the new Houses of Parliament, is borne out by the existence of a marked efflorescence of sulphate of magnesia upon those portions of the stone where exfoliation has taken place.—We have, &c.

"(Signed)

A. W. HOFFMAN.
E. FRANKLAND.
F. A. ABEL."

Now, we make bold to say that this short report, which is really the marrow of the whole Blue Book, and, perhaps, the most valuable of all the information contained in it, is very far from being a complete, or even a very correct statement of the science of the subject, notwithstanding the three eminent names attached to it. It may have been felt that harder lines of exactness would be too much for the deglutition of the committee's "practical men," or that committee work of the sort is not gone into further than the occasion demands.

(To be continued.)

WORCESTER CATHEDRAL.

HERE are a Dean and Chapter completing the work which Cromwell began, who found, by the way, his "crowning mercy" at Worcester. The period of fanatical havoc is succeeded by that of specious restoration—bigoted antipathy by superficial sympathy. Who "saw the glory of the first house"? Who knew it beautiful amidst the squalor and neglect of all centuries since the Reformation—the hacking and paring of all Deans and Chapters down to the present? Let any such look on that picture and then on this, and say whether the change has not been from King Log to King Stork. Snipiness and nonchalance were better than the vigorous prosecution of mistaken principles which this so-called restoration exhibits. It were a dignified end to succumb at last to time; it is an ignoble one for stones ancient and sacred to be improved out of shape and character by the touch of the restorer—to yield their life, their soul and poetry, beneath the slow mutilation of his chisel. Those who knew the choir of Worcester as it was from Henry III.'s time to the fifteenth century must have known that there was no such gem of Early English between Ely and Salisbury. And, in spite of the lumbering Tudor tracery in which the windows had since been disguised, the church still contained a splendid sample of church art at its best and purest. Now, whose would see the penny-a-liner's power transferred to stone, let him turn aside and look at the renovated outside of Worcester. Here is verily the fustian of architecture and the doggerel thereof. The old race of sloths and slovens could never compass such devastation in centuries as this which has been achieved in a single lifetime. The Deans and Chapters, vergers and sacristans, of other and less "aesthetic" periods did not, at any rate, do much more harm below than the rooks and jackdaws

did above. They merely pecked and clawed a nook or angle here and there. Now, "as by the stroke of an enchanter's wand" we see a grand transformation effected. The beautiful and deep mouldings are frittered away. The windows keep their outline, but there is a spirit of impoverishment and shallowness in every detail. A featureless face is upon everything. It is not merely new and sharp, which of course it could not help being if it were scraped; but it is meagre, and pawk, and vapid. It is smug and Spurgeonized. As a contrast to the spirit in which this work has been done, we must name the restored Chapter-house of Salisbury. It is possible to restore in a good sense, when some manipulation has, through time and weather, become inevitable. It is also possible to do as the Worcester architect has done, and far more easy.

If any one wants to know who this Dean and Chapter are that do such things, he may read their names in the Clergy List. "The style is the man," but our present object is not to set the men who work in this style in the pillory, which they personally merit. We simply wish to point out the utter monstrosity of consigning national monuments which are inestimable while they last, and irreparable when once sacrificed, to the unchecked custody of corporations which are composed of members chosen utterly at baphazard *qua* architectural pretensions, and which may happen to include some one specially to be trusted, or, conversely, may be made up of men who, if a gothic pillar were turned upside down, would never discover that the base had got into the place of the capital. If they were merely like Lords of the Admiralty, who knock to pieces only what they themselves have built, they might perhaps be tolerated, as expensive nuisances often are, with passive acquiescence. But what is the fact? They destroy what others created, and what they cannot replace. The fact, in short, is that of "a bull in a china-shop." The very rudiments of the art of Church architecture had lain dead and cold for centuries amongst us. They were only to be retraced by the careful study of such buildings as Worcester Cathedral. By such study some men have learned to smatter and to mimic, some others to ponder, to admire, to reverence, and to despair of rivalry. What, then, do we find this Dean and Chapter doing? They are letting loose a local genius to work his will on the venerable walls which other and better men have raised, and the form of which they themselves could never have even distantly approached in conception. They are making havoc of all that the centuries have bequeathed to us, and that the touch of time has spared. They are effacing the only elements in which yet lingers the possibility of a revival of church architecture. They are destroying the title-deeds and credentials of art under the pretence of restoring. Thus they break up the very patterns which convey first principles; they give back in their place the bauble conceptions of the nineteenth century. And the mania is spreading wildly everywhere, and seems contagious. In this same course any Dean and Chapter all over England may riot unchecked. Church architecture, in the genuine and creative sense, is being "stamped out." These bodies are practically uncontrollable. Who is there that can touch them? A Dean and Chapter, so long as they "paddle their own canoe," may bid defiance to all the architectural, all the archaeological, all the palæographical wisdom of the world. There is positively no outrage which they may not perpetrate so long as they maintain the specious name and form of a church and a worship. There is no amount of wreck and ruin which they may not consummate under the plea of restoration. The law and constitution in Church and State knows nothing of art, its interests, its monuments. By some lucky accident we have come by those priceless and peerless possessions, our cathedrals. But, though held in trust for us, the trustees have absolute power so to dispose of them as to make them worthless. We must take our chance to save or lose them. Much of Worcester, alas, is gone; York has greatly suffered; Gloucester is threatened. There seems to be no power on earth, when a Dean has once "cried havoc and let slip the dogs of" restoration, to twitch the very reverend culprit by the apron and remind him that Deans too are fallible.

Our Jeremiad was justified to the letter by the fate of the Worcester Guesten Hall. We believe that a learned society, hearing that that hall was being tampered with, endeavoured to stand in the gap and stay the destroyer's hand. The Cathedral body behaved as bodies do which have no souls, and which can only be kicked metaphorically; they turned a deaf ear to remonstrance. The securing the structure would have cost more than they could spare. They should have spared what they could as the nucleus of a fund, and have appealed to the country as on behalf of a national monument. We feel sure that the few thousands needed would have readily flowed in. Instead of this, they did what no doubt they thought a clever thing in passing on the roof of the same hall to the builders of Holy Trinity Church. The roof,

which stood before on side-walls of a height proportioned to its mass, is now squatted over a nave which has open piers and arches on the south side, and the effect is an apparent overweight. It was a marvel of proportion and adjustment, as well as beauty, where it first stood, but it appears now enormously heavy for its supports. To destroy the Guesten Hall excited indignation; to smuggle its roof away in order to cover another building, in violation of all symmetry and proportion, can only draw down contempt. We are far from supposing the Cathedral body of Worcester to be worse than the average. The very gravamen of our charge lies in this, that they pass for respectable and competent persons. But they, and not we, are chargeable with diminishing the respect due to Deans and Canons. Gentlemen who deal thus with early English architecture, must expect to be remarked upon in a pointed style.

But we have a worse and more barefaced desecration yet with which to charge these highly respectable clergymen and their very reverend head. What have they done with the bells of their cathedral? Will the reader believe the damning fact? *the bells have been sold!* We shall be glad indeed to retract our words, if they will deny it. We shall be glad to hear that the bells have been only pawned. Meanwhile we bespeak public infamy for the fact—the bells of Worcester Cathedral, *adoranda robiginis*, are bought and sold. The Dean and Chapter have "turned an honest penny" by them at so much per cwt. Whether they are destined to the melting pot, or to adorn the museum of some collector of church memorials, or to hang in some other steeple—whether Baron Rothschild or the Emperor Napoleon is the lucky purchaser—we know not. All we know is that all that lot is sold. Worcester will know them no more. Let those who have a fond, foolish, and antiquated reverence for such things as old church bells rush by return ticket to Worcester, and see them yet cumbering for a while the floor. There may be read round the crown of one, in a very early letter, "*hoc opus impleto Jesu virtute faveto*"; on another, "*habeo nomen Gabriellis*," together with the royal arms of the fifteenth century, probably those of King Henry VI. Are not these facts enough to overwhelm even a Dean and a Chapter? Here are things, sacred by all the poetry of Christian art, knocked down like a lot of old pots at a village auction, kicked out to make room for newer gear. Who will take the Dean and Chapter's offer of "old lamps for new?" Now is their time. What is so sacred to the ear and heart of a Churchman—so endowed with an almost personal consecration—as an old church bell? Here are these bells, which have sung their song of joy and sorrow, and have borne their burden of sympathy with human feelings for half a thousand years, turned into hard cash by their dignified custodians. And what are they going to do with the tower? Its doom is dark as yet. We suspect mischief. If it were in the nature of things to get a handsome offer in a business-like way for an aged church tower, we doubt not the tower would follow the bells. Would any gentleman of the Hebrew persuasion like to do a good thing in old church towers? Let him keep his eye open on Worcester.

There is one thing which will surprise those who may visit Worcester to mourn over the work of havoc. They will start, amidst the scene of devastation, to hear the name of Mr. Gilbert Scott mentioned as having architectural functions there. But we believe that he is as innocent of the above-mentioned atrocities as the child unborn. He merely comes in by accident, as surveying for the Ecclesiastical Commissioners in a matter relating to the internal arrangements of the church. How he must vex his soul, like Lot in Sodom, among such a cathedral body! The little boys of the Cathedral school undergo disciplinary visitation if caught scribbling on a slab or a pillar. What should be the penalty for those who, clothed with names of dignity and authority abuse them to deface wholesale the features of antiquity, in order to leave their own miserable potbock style recorded instead? Talk about Americanizing institutions! Here is the whole church architecture of England being Americanized, being regularly whittled away, as if Congress were sitting upon it. And the perpetrators enjoy credit for their assumed discernment and taste, instead of being, as they ought, unable to show their heads.

We believe that upon the doors of a cathedral or abbey church in Yorkshire were lately found certain nailheads; on the nailheads certain shreds of what might have been parchment, but which revealed, under the microscope, fibres of a human cuticle and hair. It was, doubtless, all that remained of the mortal hide of some Abbot or Dean who had pared down mouldings, mutilated sculpture, and alienated church bells. Discipline in this summary Bartholomæan form had overtaken him; and, until that branch of it be revived, "which is much to be wished," the only remaining equivalent is to expose such enormities to the indignation of mankind.—*Saturday Review*.

CHESTER TOWN HALL.

WITH respect to the strike which were marked had occurred amongst the masons at this building, we find the following in the last issue of the local paper, the *Cheshire Observer*:—"The strike at the new Town Hall continues, and the contractors are still anxious to get rid of their job on the best terms they can. Hitherto we believe that no arrangement has been come to, and the next thing on the cards is to give the contractors the stipulated ten days' notice to proceed with the works. Of course the Council are not likely to change the Clerk of the Works who has hitherto looked after the interests of the townspeople with efficiency. He has given satisfaction to his employers, and their dissatisfaction could be the only adequate reason for removing him."

ANTIQUARIAN.

Mr. Gordon gives the following account of his discovery, while fishing in Carlinwark Lock on the 2nd inst., of a caldron containing a large assortment of antique armour, and armourer's tools:—"While drifting quietly along in the neighbourhood of the Fir Island, we saw what we thought was the rim of a large pot protruding from the mud, about five feet under water. We immediately anchored, and succeeded in fixing a grappling iron into it, but so firmly fixed was it in the mud, which covered more than three-fourths of it, that for a long time it resisted all our efforts to move it. By belaying the rope, however, and swaying the boat from side to side, we loosened it and got it to the surface, when, to our great surprise, there appeared an immense brass caldron, shining like gold, and of great weight. It being beyond our strength to lift it out of the water, we commenced shovelling out the mud with our hands, and while doing so my hand came in contact with the head of a hammer of antique shape and a piece of chain mail. Of course we stopped at once, and being much excited by the discovery, made a tremendous effort and got it on board. We were richly rewarded for our toil, for we more than filled two fishing-baskets with spear and sword points, axes, hammers, horse-bits, pieces of chain and plate armour, and a lot of armourer's tools, the whole weighing several stones. The caldron itself is about 2½ feet diameter at the mouth, and will contain about thirty gallons. It is built of pieces of brass beautifully fastened together with small rivets, and patched in a great many places with the same neatness. I have communicated with the secretaries of the Edinburgh and Dumfries and Galloway Antiquarian Societies, so that some light will be thrown upon the antiquity of the articles, when you will no doubt bear of their decision. My own opinion is that they were immersed about the year 1300. It is matter of history that Edward I., when in possession of Galloway, had a camp in the Fir Island, and the remains of a camp have been found in it. This caldron, when unfit for its usual purposes, may have been used by the armourer or smith of the camp as a receptacle for his scraps, odd tools, &c., and when the party evacuated the island, they may, to prevent the Gallowayians getting any metal into their possession, have rowed it out into the loch and sunk it where we found it. I have the whole affair in my possession in the meantime, and shall be very happy to show it to any persons interested in antiquarian remains."

Two men working last week at a sewer at South-hill avenue, Booterstown, found a jar containing about four hundred old silver coins.

IRISH BUILDING NEWS.

ESTABLISHED CHURCH.

Messrs. Lanyon, Lynn and Lanyon are the successful competitors for the new front to the Magdalen Asylum Chapel, in Leeson-street. Contract drawings are in course of preparation.

A new front to St. Anne's Church, Dawson-street, is on the *tapis*. Messrs. Lanyon, Lynn and Lanyon, and Mr. T. N. Deane have been named as competitors for the honor of a difficult and troublesome undertaking. A good deal of unnecessary sentiment is being wasted over the proposed destruction of what there is of the existing front. The venerable antiquity of a hundred years and some elegancies of detail are not sufficient merits to counterbalance an unremarkable design in a state of hideous incompleteness.

The Boyd Church, Ballycastle, Co. Antrim, has been re-opened after extensive alterations and improvements in the interior. The high old-fashioned pews have been removed, and new open ones substituted. The reading pew and clerk's seat have been taken away, and a Gothic lectern is now in their place. Wrought-iron standards, of a dark-blue colour, with gilded foliage, support the communion-rail, and which, with the elegant paraffin lamp standards

throughout the church, were supplied with Messrs. Riddel, of Belfast. A new crimson communion-cloth, a carpet, pulpit hangings, brass alms dishes, and a series of illuminated scrolls, with texts, occupying the blank spaces round the walls, are amongst the other improvements. A new organ has been supplied by Messrs. Telford & Telford, of Dublin, with a Gothic frame and ornamental pipes in front. It is placed in the north-east angle of the nave, and the seats for the choir, arranged stall-wise, are close by.

ROMAN CATHOLIC CHURCH.

The Roman Catholic church of Donohil, near Cap-pawhite, is about to undergo extensive alterations, a new belfry, buttress, and piers to be built, and the rest of the building put into thorough repair.

GENERAL.

A new hair-cutting establishment, opened by Mr. George Lucas in Suffolk-street, deserves a word of notice for the advance it displays in matters of comfort, cleanliness, and comparative elegance, when compared with other similar useful establishments. There is a large saloon on the ground floor, as attractive as fresh painting and gilding and scrupulous neatness can make it. A shaft runs the entire length of the apartment, which supplies motive power to an indefinite number of rotating hair brushes. Each customer's seat is provided with a marble basin, with the necessary appliances for the luxury of shampooing. In the basement are comfortable bath rooms, with douche and shower baths, and adjoining the large saloon are W.C.s for gentlemen, and convenient and, what is still more important, airy and well-ventilated work-rooms for the employés. There are ladies' saloons upstairs. The alterations have been executed by Mr. J. J. Nolan, builder; the painting and decoration by Mr. Cosack, and the plumber's work by Mackenzie, Bain, & Co., of Capel-street.

Mr. John Nolan, of Meredyth-place, has been declared contractor for the new Royal Insurance Office, Dame-street, at an amount somewhat exceeding £5,000; Mr. William G. Murray, architect. The building will be an elaborate one, and in the Italian style.

Extensive alterations and additions are to be made to the Court-house, Cavan.

A new boat-house is to be built at the coast guard station at Portrush, Co. Antrim.

Sir William G. Johnson and Lady Johnson, of Belfast, have presented the sum of £2,000 for the purpose of building and furnishing an eye and ear hospital for that town. A committee has been appointed to look out for a suitable site, and it is hoped that some liberal person will come forward and grant a free site, stimulated by such a noble example.

The Lords of the Treasury have sanctioned the recommendation of the Board of Works for the erection of a pier at the Lady's Cove, Tramore.

Cairncastle Lodge, the residence of James Chaine, Esq., near Larne, is undergoing extensive improvements.

Messrs. R. and D. Anderson, Upper Church-lane, Belfast, have fitted up a spacious concern for the manufacture of lucifer matches.

A new lighthouse is to be built on Scatterry Island, Co. Cork.

The foundation stone of a new spinning and weaving factory was laid on the 6th inst. at Newtownlimavady, by John Alexander, Esq., the landlord of the ground on which it is to be erected.

Gnrteen House, Tipperary, the residence of Edmond de la Poer, Esq., D.L. has been completed, and given up to that gentleman by the architect, Mr. S. U. Roberts, and the builder, Mr. Thomas Henry Carroll, of Baggot-street, Dublin. This mansion, erected in the partly Elizabethan and partly Italian style of architecture, occupies a commanding site, within one of the finest and most picturesque estates in the neighbourhood.

TENDERS REQUIRED.

For new National Bank house and out-offices at Charleville, county Cork, to 30th inst.

For Convalescent Home at Stillorgan, county Dublin, to 21st inst.

For Coastguard station at Dooran, county Donegal, to the 7th prox.

For Constabulary barracks at Maam, county Galway, to 28th inst.

For a factory in Lower Liffey-street.

For Coastguard station at Castletownsend, county Cork, to 31st inst.

For painting, colouring, whitewashing, and papering at Mullingar Barracks, for the Royal Engineers, to 25th inst.

MISCELLANEOUS.

Lord Monson has lately intrusted Mr. G. A. Rogers with the restoration of the magnificent carvings executed by Gibbons for his Lordship's Gatton estate. Worms and beetles had attacked these beautiful works with such energy that their entire destruction was almost completed; the interior of the wood being reduced to powder and the surface perforated with countless holes. The carvings consist of birds, fruit, fish, and flowers of every description. The restoration, which required great care and was of a time-taking character, was as follows:—Mr. Rogers had them photographed; he then separated all the joints and loose pieces, and thoroughly destroyed all insect life by means of corrosive sublimate and other poisons. The next operation was to scrape all the powdered rotten portions away from the back and to fill the holes thus made with a soft hardening substance, so as to strengthen the entire work. Then the holes in the front surface had to be stopped with a poisoned cement, and the whole remounted by aid of the photographs. Lord Monson has kindly given to Mr. Rogers a specimen of the decayed carving, so as to show the state they were in to those interested in the art.—*Athenæum*.

The proprietor of the new Cirque de Prince Imperial, at Paris, has recovered a sum of upwards of £10,000 compensation against a building company of that city for failing to complete the construction of the cirque within the specified time.

We understand that the statue of Edmund Burke, by Foley, is nearly completed. About £200 is still required to defray the cost. The statuette can be seen at Cranfield's.

Some malicious person or persons lately gained admittance to the North British and Mercantile Insurance Offices, in High-street, Belfast—almost completed by Messrs. R. and H. Fulton—and smeared the walls and staircase with paint and rubbish. Thirteen master builders in Belfast have joined, and offered a reward of £50 for the discovery of the offenders, or £20 for private information.

The Mining Company of Ireland has declared a dividend of 11 per cent., free of income tax, for the last half year.

The nieces of the late Admiral Meynell, late M.P. for Lisburn, have presented to the National Lifeboat Institution the munificent sum of £500, to defray the cost of a lifeboat. The boat, which is 32 feet long, and is named the Admiral Meynell, had its harbour trial on Monday in the Regent's Canal Dock, Limehouse. It is to be stationed at Ballywalter, County Down.

Our liberties are preserved in brine, said Jerrold; and once in a dozen years, at least, we find reason to be grateful for the twenty miles of sea-sickness which separate us from our continental allies. As a matter of political sentiment, therefore, we are not inclined to rejoice over Mr. Hawkshaw's scheme for uniting Kent and the Pas de Calais by a railway tunnel; but science will take its own course, as it did in the Box Tunnel, the Thames Tunnel, and other projects, if it can only obtain the money from a confiding public. A plan with less of solid hope in it than a projected extension of the Chatham and Dover line into France—by way of the Channel bed—it would be difficult to find on this side of the Isthmus of Suez. Mr. Hawkshaw seems to have higher faith, and we learn that he is causing some preliminary shafts to be dug on either side of the Channel, in the hope of finding favourable geological conditions for his experiment. We should fear that the unfavourable conditions will be mainly discovered on the Stock Exchange. Who wants a railway across the Straits of Dover?—*Athenæum*.

At the great copper mine, near Ballydehob, Co. Cork, a very valuable discovery has recently been met with at ninety-four fathoms from the surface, consisting of the richest peacock and purple kinds of ores. From the immense blocks of that handsome and highly valuable ore to be seen coming up from the great depths of this mine, an uninitiated would even proclaim it to be one of the greatest of the resources Ireland possesses.

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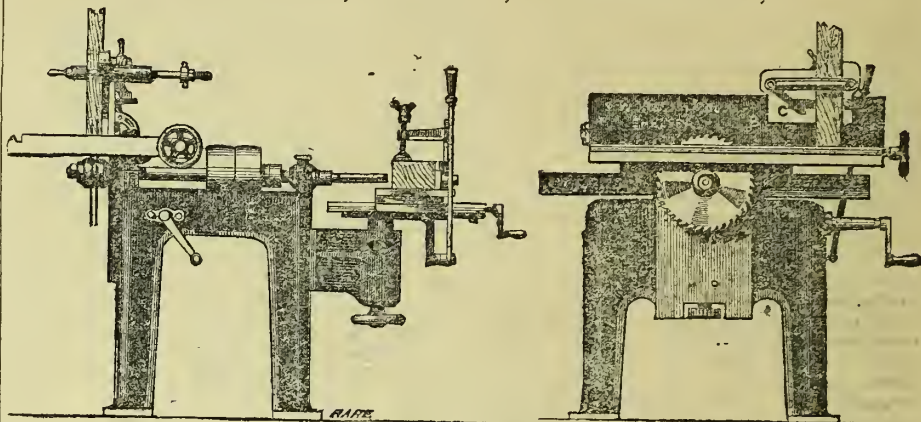
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 892 Logs City St. Domingo MAHOGANY,
 282 Curls " " do.
 2 Logs " " SATINWOOD,
 727 Pieces " " LIGNUMVITÆ,
 Being the cargo now landing ex Thozia, from City St. Domingo.
 On account of the Importers,
 400 Logs and Curls St. Domingo MAHOGANY,
 Now landing, ex Marcelo, from Port-au-Prince.
 75 Planks Italian WALNUT,
 Just landed, ex Arabian and Syrian, from Ancona.
 419 Logs Pencil CEDAR,
 Now landing, ex Bessie, from New Orleans.
 224 Logs Pencil CEDAR,
 Daily expected to arrive, per Royal Standard, from New York
 641 Logs BEECH TIMBER,
 Just Landed, ex St. James, from Quebec,
 On account of the Importers.
EDWARD CHALONER, Wood Broker and Measurer,
 6, East Side, Queen's Dock, Liverpool.

AUCTION OF WOOD GOODS.

WM. CARVILL will offer by AUCTION
 on THURSDAY, 19th inst. in the CUSTOM HOUSE DOCK, DUBLIN, at One o'clock, the following Cargoes, &c.
 A consignment of HONDURAS MAHOGANY, measuring about 20,000 superficial feet.
 The "Danish Prince" with an assorted cargo, } from Québec.
 "Colonist" do.
 "Amazona," Memel, a prime cargo of Timber.
 "Resolution," a prime Lot of Red Norway Battens.
 "Sirian Star," from St. John's, New Brunswick, a prime Cargo Spruce Deals and Lathwood.
 A prime Cargo of Sundswall Timber.
 About 30 fathoms 4-feet Memel Lathwood.
 For further particulars see Catalogues of Sale.
JAFFRAY BARCROFT, Broker and Measurer.
 Dublin, 13th July, 1866.

BUILDING MATERIALS—Timber, Deals, SLATES, TILES, &c. Best Quality, and Moderate Prices.

SAMUEL TICKELL,
 54 TOWNSEND STREET, DUBLIN.

QUEEN'S PARK, MONKSTOWN, CO. DUBLIN. The Proprietor is now prepared to let on lease several judiciously planned Sites for Villas in the above beautifully situated Grounds, which have been planted and laid out—regardless of expense, and in the best taste—for the purpose.

QUEEN'S PARK
 Occupies a well-chosen, elevated position on the south side of the road near Belgrave-square, convenient to Seapoint, Monkstown, and Blackrock Railway Stations, and commanding a good aspect, and extensive Mountain and Wooded Scenery.
 The roads and main sewers have been constructed in the best possible manner, and with all modern improvements.
 Application to be made to—**MR. ALFRED G. JONES, 3, Molesworth-street, Architect,** where a Lithographed Plan can be seen, and all necessary particulars and conditions ascertained; or to **MR. WILLIAM FRY, Solicitor, 13, Lower Mount-street, Dublin.**

MESSRS. EARLEY AND POWELLS beg to announce that Messrs. John Hardman and Co., of No. 1, Upper Camden-street, have resigned the business of Artists, Sculptors, Church Painters, and Metal Workers, in their favour.

Earley and Powells have added to the above mentioned business the Painting and Staining of Windows for ecclesiastical and domestic buildings, under the management of Mr. Henry Powell, who conducted the Stained Glass Department of J. H. and Co., Birmingham for many years.
 Mr. Thomas Earley is the only Church Decorator living who was taught his profession by the late A. Welby Pugin.
 E. and P. being thoroughly practical men in each Department, are enabled to supply real artistic work at a moderate cost. They, therefore, respectfully solicit the patronage of the Clergy and Gentry of Ireland.
CAMDEN-STREET WORKS, DUBLIN.

NOTICE TO BUILDERS.

BALLYNOCKEN GRANITE STONE, of the best quality, can be supplied in Blocks up to 8 ton, and in Lengths up to 16 feet. List of prices will be sent on application to **JOHN BRADY, Ballynocken Granite Stone Quarry, Blessington, Co. Wicklow.**

THE ROYAL EXCHANGE ASSURANCE

(Incorporated A.D. 1720, by Charter of George the Third.)
 CHIEF OFFICE—Royal Exchange, London.
CORBET & ARMSTRONG, AGENTS.
 No. 5, COLLEGE-GREEN, DUBLIN.
 FIRE, LIFE, and MARINE ASSURANCES on liberal terms.
 LIFE ASSURANCES with or without participation in Profits.
 Divisions of Profit every FIVE YEARS.
 Any sum up to £15,000 insurable on the same Life.
 The cost of Policy Stamps and Medical Fees borne by the Corporation.
 No extra charge for service in the Militia, Yeomanry, or volunteer Corps within the United Kingdom.
 A liberal participation in Profits, with exemptions under Royal Charter from the liabilities of Partnership.
 A rate of Bonus equal to the average returns of Mutual Societies, with the additional guarantee of a large invested Capital Stock.
 The advantages of modern practice, with the security of an Office whose resources have been tested by the experience of NEARLY A CENTURY AND A-HALF.
 FIRE ASSURANCES effected on every description of property at current rates.
 FARMING STOCK assured generally at 5s. per cent. per annum.—The use of Steam Threshing Machines allowed without additional charge.
 Tables of Rates, Scale of Bonns declared, and all other information, may be had on application to
CORBET & ARMSTRONG, Agents and Stock Brokers,
 No. 5, COLLEGE-GREEN, DUBLIN.
 By whom Bank Stock, Government Stock, and Debentures, and all other public Securities, are daily bought, sold, and transferred.

Dublin: Printed and Published by and for the Proprietor, PETER ROR, at the Office, 42, Mahbot-street. May be had direct from the Office, or through any Bookseller.

The Dublin Builder.

ILLUSTRATED RECORD OF ART, SCIENCE, INDUSTRY, & MANUFACTURE.

No. 159.

PRICE .. 3d.
PER POST, .. 4d.

AUGUST 1, 1866.

1ST & 15TH
OF EACH MONTH.

VOL. VIII.

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ILLUSTRATION:

NEW CATHOLIC CHURCH, MOOR PARK, PRESTON.

Contracts.

BOARD OF PUBLIC WORKS.

NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be received up to the hour of 12 o'clock, noon, on the 14th of AUGUST, 1866, for BUILDING

A **BOAT-HOUSE**, and Executing sundry Alterations, Additions, and Repairs at BALLYMACAW Coast Guard Station, Co. Waterford, according to Plans and Specification to be seen on application to the Chief Officer at the Station.

Each Proposal is to be for a lump sum, and must be accompanied by a separate Detailed Estimate giving Quantities and Prices, and be endorsed "Tender for Ballymacaw Coast-Guard Station."

Both Tender and Detailed Estimate should bear the Name and Address of the Proposer on the back.

Printed Forms for Tenders can be had at the Station.
N.B.—Persons Tendering should send in Testimonials as to character and competency, unless previously known to the Board.

By Order of the Board,

EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 28th July, 1866.

• If this be not attended to, the Board cannot return detailed quantities to the unsuccessful parties.

BOARD OF PUBLIC WORKS.

NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be received up to the hour of 12 o'clock noon, on the 7th of AUGUST, 1866, for BUILDING

A **COAST-GUARD STATION**, consisting of Houses for One Chief Boatman and Four Men, Watch-house, Boat-house, and Store, at DOORAN, near Mountcharles, County Donegal, according to Plans and Specification to be seen at this Office, and on application to Mr. PATRICK LYACH, Clerk of Works, at Enniskillen National Model School.

Each Proposal should be for a lump sum, and must be accompanied by a separate Detailed Estimate, giving Quantities and Prices, and be endorsed "Tender for Dooran Coast-Guard Station."

Both Tender and detailed Estimate should bear the Name and Address of the Proposer on the back.

Printed Forms for Tenders can be had at this Office, or from Mr. LYACH.

N.B.—Persons Tendering should send in Testimonials as to character and competency, unless previously known to the Board.

By order of the Board,

EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 6th July, 1866.

• If this be not attended to, the Board cannot return detailed quantities to the unsuccessful parties.

TO CONTRACTORS.

ENGINEERING WORK AT CLARE LUNATIC ASYLUM.

TENDERS are invited from competent Persons for Steam Engine, Boilers, Pumps, Cooking Apparatus, Plumbing, and other Works for the above building, in accordance with Plans and Specifications, prepared by A. C. ADAIR, Esq., which may be seen at his Office in Ennis.

The Tenders are to be sent to R. M. ARDAGH, Esq., Office of Control, Lunatic Asylums, Dublin Castle, on or before 20th day of August next, before One o'clock, endorsed on outside "Tenders for Engineering Works, &c., Clare Lunatic Asylum."

The lowest or any Tender will not necessarily be accepted.
July 23rd, 1866.

TO GAS CONTRACTORS AND ENGINEERS.

COUNTY CLARE LUNATIC ASYLUM.

TENDERS are invited for a GAS-MAKING APPARATUS, and GAS FITTINGS for the above-mentioned Building, in accordance with specifications and conditions prepared by A. C. ADAIR, Esq., which may be seen at his office in Ennis.

The Tenders are to be sent to R. M. ARDAGH, Esq., office of Control of Lunatic Asylums, Dublin Castle, on or before the 20th day of August next, before Two o'clock, endorsed on outside "Tender for Gas Apparatus, Clare."

The lowest or any Tender not necessarily accepted.
July 25th, 1866.

COUNTY OF CLARE.

TO IRON FOUNDERS AND BUILDERS.

TENDERS will be received up to Two o'clock, p.m., on Tuesday, the 14th of August next, for ALTERING and REPAIRING the BRIDGE between High-street and Bindon street, in the Town of Ennis, by erecting an IRON SUPERSTRUCTURE on same in accordance with the Plans and Specification of the County Surveyor, to be seen at the Office of the Grand Jury Secretary, Ennis, the cost not to exceed £2,000.

The Tenders will be received either for the whole work, as specified, or two separate Tenders from different parties; one to include the removal of the portion of Bridge and Walls to be taken down, together with the execution of the stone and Masonry Work; the other for providing and fixing the whole of the Iron Work and executing the painting, &c.

The Tenders to be sealed and directed to the County Surveyor, Ennis, marked on outside "Tender for Iron Bridge." Court House, Ennis, 14th July, 1866.

TO CONTRACTORS.

ENGINEERING WORK AT WEXFORD COUNTY LUNATIC ASYLUM.

TENDERS are invited from competent Persons for Steam Engine, Boilers, Pumps, Cooking Apparatus, Plumbing and other Works, at the above Asylum, situate near Enniscorthy, according to Particulars to be seen at the building, or at the Office of Mr. FARRELL, Architect, at Wexford.

Sealed Tenders, endorsed "Tenders for Steam Works, Wexford Asylum," to be addressed to R. M. ARDAGH, Esq., Office of Control, Dublin Castle, on or before 25th August next, before One o'clock.

The lowest or any Tender will not necessarily be accepted.
July, 1866.

CHARLES SHEIL'S CHARITIES ALMS HOUSES.

PERSONS desirous of Tendering for the ERECTION of the set of the above Alms Houses at Killough, Co. Down, may see the Plans and Specification referring thereto at the Offices of Messrs. Lanyon, Lynn and Lanyon, 64, Upper Sackville-street, Dublin, any day between the hours of Ten and Five o'clock from the 30th July, to the 1st August, and at their Belfast Offices, 2, Queen-street, from the 2nd to the 11th inst.

Tenders to be lodged, prepaid, on or before Monday, the 13th August, 1866, with

PLATO OULTON, Secretary.

62, Up. Sackville-st., Dublin.

N.B.—Quantities will be supplied.

TO CONTRACTORS.

SIXMILEBRIDGE DRAINAGE DISTRICT, CO. CLARE.

PROPOSALS will be received on or before 8th August prox., from persons willing to undertake by Contract the execution of the Works required to be done to portions of the Rivers and Streams in this District, viz.:—

2. OWENOGARNEY RIVER, between Doon Lough and Lough Bridget.

3. GLENOMERA RIVER.

4. BALLYMACDONNELL and KILLURIN RIVERS.

5. MOUNT ALLON STREAM.

According to Plans, Sections, and Specifications, prepared by JOHN HILL, Esq., C.E., to be seen at the Secretary's Office, 13, Thomas-street, Limerick, and at the Engineer's Office in Tullamore.

Parties proposing to name two separate persons willing to join in a bond for the due performance of the Contract.
The Board do not bind themselves to accept the lowest or any Tender.

Tenders to be sealed and marked outside "Tenders for Six-milebridge Drainage Works," and addressed to PATRICK S. CONNOLLY, Esq., Solicitor, 13, Thomas-street, Limerick, will be taken into consideration at a meeting of the Board to be held in Broadford on the 9th prox.

Limerick, 14th July, 1866.

TO CONTRACTORS.

SIXMILEBRIDGE DRAINAGE DISTRICT.

PROPOSALS will be received on or before the 8th August prox., from Persons willing to undertake the completion of the Works required to be done to the OWENOGARNEY RIVER, between a point below the old Oil Mill Bridge and Doon Lough; and the works required to be done to the Stream between Drumminkella Bridge and the Main River at Drumminkella, according to Plans, Sections, and Specifications, prepared by JOHN HILL, C.E., Tullamore, to be seen at 13, Thomas-street, Limerick, and at the Engineer's Office, Tullamore.

Parties proposing to name two solvent persons willing to join in a bond for the due performance of the Contract.
Tenders addressed to Patrick S. Connolly, Esq., 13, Thomas-street, Limerick, marked on the outside "Tenders for Works of Six-milebridge Drainage," will be taken into consideration at a meeting of the Drainage Board to be held in Broadford, on the 9th August prox.

The Board do not bind themselves to accept the lowest or any Tender.

Limerick, 24th July, 1866.

TO CONTRACTORS.

BUILDING A CATHOLIC CHURCH NEAR GREYSTONES, COUNTY WICKLOW.

TENDERS according to the Plan and Specification, to be seen at the residence of Mr. E. W. O'Kelly, Architect, Bray, will be received by the Very Rev. Canon Lee, P.P., up to 15th August next.

The lowest Tender will not necessarily be accepted. The person declared Contractor will be required to enter into a bond with two sureties for the due performance of the Contract within a given time.

Bray, July 30th, 1866.

TO CONTRACTORS, ENGINEERS, SHIPBUILDERS, COLLIERY OWNERS, &c.

SECTIONS and PRICES forwarded on application, for Boiler, Bridge, Boat, and Ship Plates; Angle, Tee, Beam, Girder, Joist, and Desk Iron, of all sizes; Sheet Iron, Plain, Corrugated, or Galvanised; Wire Rods for drawing, or telegraph, or fencing; Black or Galvanised Wire Ropes; Permanent, Colliery, or Tram Rails; Hoop Iron, Nail Rods, Silt Nut Iron, Gutter, Bevelled, Taper, Convex, Half Round, Sash, Tyre, and all descriptions of Fancy Iron; Bar Iron of all sizes; Wrought-iron Forgings, Castings, and Railway Material of every description. JOHN HORSLEY, Staffordshire Iron Agency Office, St. ANN'S-SQ., MANCHESTER.

ROYAL HIBERNIAN ACADEMY OF ARTS.

The Annual Exhibition of Painting, Sculpture, and Architecture is now open. Also the Petrie Collection. Admission—One Shilling; Season Ticket, Half-a-Crown. Catalogue, Fourpence.

M. ANGELO HAYES, R.H.A., Secretary.
Lower Abbey-street, Dublin.

Statuary, Marbles, Cements.**FERGUSLIE FIRE-CLAY WORKS, PAISLEY.****GLAZED SEWER PIPES** (Patent and Socket), and all Articles made of Fire-clay of superior quality, for Sale at the Depot,
No. 56, NORTH WALL-QUAY, DUBLIN.

ROBERT BROWN.

Also, DRAIN PIPES of all sizes for Field Drainage.
Prices very moderate.**CHIMNEY PIECES**—in Italian, Belgian, Irish, and English Marble; suitable for Drawing-rooms, Dining-rooms, Bed-rooms, &c. A very large Stock to select from.

BROOKS, THOMAS & Co., Sackville-place, Dublin.

ROMAN, PORTLAND, Mastic, and other CEMENTS, PLASTER OF PARIS, WHITING, and GYPSUM.

SALMON, RICE, AND CO.,

MANUFACTORY AND MILLS—CROWN-ALLEY.

OFFICE—8, ANGLESEA STREET DUBLIN.

THE MANASPIE'S**PLAIN AND ORNAMENTAL STUCCO**

PLASTERERS, SCAGLIOLA and STATUE ARTISTS, ASPHALT MANUFACTURERS, take contracts in all parts of Ireland, and sell their statuary and house ornaments for reduced prices.

31 GREAT BRUNSWICK-STREET, DUBLIN.

IMPERISHABLE TESSELATED PAVE-**MENTS.**—H. SIBTHORPE AND SON, Agents to Maw and Co., are prepared to supply Designs for Floors of Churches, Conservatories, Entrance Halls, and Passages, with proper Workmen to lay them in any part of Ireland.

Various specimens may be seen at their Warerooms.

11 AND 12, CORK-HILL, DUBLIN.

HYDRAULIC LIME AND ROMAN

CEMENT, Manufactured by LLOYD, JONES, & CO., HALKIN WORKS, HOLYWELL, FLINTSHIRE.

The Halkin Hydraulic Lime is the same as used in the construction of the Liverpool Docks, Manchester and various Waterworks, Collieries, and Mines throughout the country, being so long celebrated for its strong cementitious and connecting powers for Masonry in Water, can be supplied by Rail or Water to any part of the kingdom, either in lump (loose) or ground, and in barrels and bags. The Limestone can be had in full cargoes, also their Cement in barrels, which is of a very superior quality, and warranted pure.

Orders to be accompanied by a Banker's reference.

Apply at the works, or to

E. AND W. AARON, Agents,
66, SOUTH JOHN-STREET, LIVERPOOL.**CEMENTS.****JOHN BAZLEY WHITE & BROTHERS'**

CELEBRATED

LONDON ROMAN CEMENT,
LONDON PORTLAND CEMENT, and
KEENE'S MARBLE CEMENTS,

Now Sold at greatly Reduced Prices, by

C. LAVENDER,

66½, GRAYTON-STREET, DUBLIN.

TESTIMONIALS.

From WILLIAM TITE, Esq., M.P. for Bath, and Architect of the Royal Exchange, London.

House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have used both the sorts of Cement manufactured by your firm, and that of Messrs. Francis & Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good. I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant,
Messrs. White & Son. (Signed) WILLIAM TITE.

From R. O. MINNIE, Esq., Surveyor to Board of Ordnance, London.

War Office, Pall Mall, London, S.W.,

3rd March, 1864.

GENTLEMEN,—In reply to your request, I have much pleasure in stating my favourable opinion of the quality of your Portland and other Cements, which have been extensively used in the Public Works connected with the War Department at home and abroad, especially in several of the fortifications now being erected in this country. On all occasions within my knowledge the quality has been equal to that of any other manufacturer, and has given great satisfaction.—I am, gentlemen, your obedient servant,
(Signed) R. O. MINNIE, Surveyor.**MARBLE CHIMNEYPIECES, GRATES, FENDERS, and FIREIRONS** suitable for Drawing-rooms, Dining-rooms, Bedrooms, Studies, Libraries, also a number of new Gothic Designs.

HODGES AND SONS, -

16, WESTMORELAND STREET.

MESSRS. EARLEY AND POWELLS beg to announce that Messrs. John Hardman and Co., of No. 1, Upper Camden-street, have resigned the business of Artists, Sculptors, Church Painters, and Metal Workers, in their favour.

Earley and Powells have added to the above mentioned business the Painting and Staining of Windows for ecclesiastical and domestic buildings, under the management of Mr. Henry Powell, who conducted the Stained Glass Department of J. H. and Co., Birmingham for many years.

Mr. Thomas Earley is the only Church Decorator living who was taught his profession by the late A. Welby Pugin.

E. and P. being thoroughly practical men in each Department, are enabled to supply real artistic work at a moderate cost. They, therefore, respectfully solicit the patronage of the Clergy and Gentry of Ireland.

CAMDEN-STREET WORKS, DUBLIN.

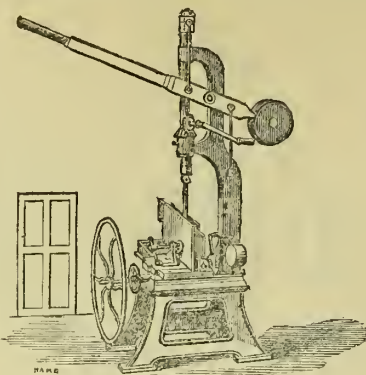
The ONLY MEDAL given for **FIRST-CLASS MACHINERY** for WORKING WOOD.See **JURORS' AWARD**,

INTERNATIONAL EXHIBITION, 1862, to

POWIS, JAMES, & Co.,**SAW MILL ENGINEERS,****VICTORIA WORKS,**

VINE STREET, BELVEDERE ROAD, LAMBETH, LONDON, S.

(REMOVED FROM VICTORIA WORKS, BLACK-FRIARS ROAD.)



PATENT MACHINE for MORTISING, TENON CUTTING, and BORING, with SELF-FEEDING MOTION, a great saving of Manual Labor, ONE Man doing the Work of EIGHT. Over 3,000 already sold at HOME and ABROAD. Price, complete with Set of Tools for each work, £21.

POWIS, JAMES, & CO., invite all who are thinking of Putting Down a MOULDING or FLOOR BOARD PLANING MACHINE to see their NEW PATENT FOUR CUTTER MACHINE.

POWIS, JAMES, & CO., also call the attention of RAILWAY CONTRACTORS, and Others, to their NEW PATENT SLEEPER BORING MACHINE, suited for any Gauge, and to Bore either Vertically or at any angle.

POWIS, JAMES, & CO., also invite Inspection of their IMPROVED "GENERAL JOINER" for SAWING, GROOVING, RABBETING, TENON-CUTTING and BORING, together with PLANING, THICKENING, and MOULDING, most valuable to those who have not room to put down separate Machines for the different works named.

POWIS, JAMES, & CO., also invite all Carriage and Wagon Builders to see their NEW PATENT UNIVERSAL WHEEL-MAKING MACHINE for SAWING, BORING, TURNING, &c., WHEEL STOCKS, and making and finishing FOUR SPOKES at ONE TIME.

Plans and Contracts supplied for the erection of STEAM ENGINES, BOILERS, SHAFING, and every description of SAW MILLS and RAILWAY WAGON and CARRIAGE MACHINERY, upon application at Chief Office—26, WATLING-STREET, CITY, E.C.

BY HER MAJESTY'S ROYAL LETTERS PATENT.

THOMAS ALLCOCK, late Richard Griffiths, TUBE WORKS and BRASS FOUNDRY, SNOW HILL WHARF, BIRMINGHAM, Manufacturer of the**PATENT BRASS GROOVED ORNAMENTAL POLE**

with REGISTERED ENDS, RINGS, and BRACKETS to match; PICTURE RODS, MOULDINGS FOR ROOMS, STAIR RODS, WITH EYES TO MATCH, CORNICE MOULDINGS, &c., Stair Rods and Eyes of every description; Cornice Poles, Brass and Three-quarter Covered, Pulled, and Bent; Rings, Brackets, Ends, and Bands; Brass Desk, Pew, Organ, and other Railing; Picture Rods and Furniture, Curtain and Wardrobe Rods, Fire Screens, Stands and Arms.

SHOP WINDOW FITTINGS, Carpet Clips, and Plates, Brass and Plated Coach and Chair Beading, Artrags, Gas and Bell Tube, Brass Cased Tube, Twisted Tubes, and Tubes of every description (Rough and Finished); African Armlet Rings, &c., &c. A good Assortment of Drop and Round Cornice Pole Ends, entirely new.

BOOK AND SHEET OF ENGRAVINGS CAN BE HAD ON APPLICATION.

N.B.—Zinc Bell Tube, Stair Rods and Eyes; Three-quarter Poles, Ends, Brackets; also Patent Cased Tube, Polished and Lacquered, from ½ in. to 1 in. diameter, always in Stock.

Cornice Poles, Picture and Stair Rods Made to any design.

GOOD QUALITY, LOWEST PRICES, AND DISPATCH.

THE INTERNATIONAL EXHIBITION PRIZE MEDAL, AWARDED 1862; ALSO THE DUBLIN MEDAL, 1865.

ESTABLISHED 1744.

AUSTINS' IMPERIAL PATENT SASH AND BLIND LINES,

TO BUILDERS, CARPENTERS, UPHOLSTERERS, AND BLIND MAKERS.

J. AUSTIN and SON, Manufacturers of the above articles, particularly wish to direct the attention of the Trade to their

IMPERIAL PATENT FLAX SASH-LINES,

of which they are now making four qualities, and they strongly recommend that in all cases they should be purchased in preference to the PATENT LINE made from Jute, which article has neither the STRENGTH nor the DURABILITY of FLAX, consequently cannot give so much satisfaction to the consumer. They also invite the particular attention of Upholsterers and Blind Makers to their improved Patent Blind Lines, which are very much superior to anything yet offered to the Trade.

They can be obtained of all Rope-makers, Ironmongers, Merchants, Factors, and Wholesale Houses in Town and Country.

GUEST AND CHRIMES,
FOUNDRY AND BRASS WORKS, ROTHERHAM.

DUBLIN BRANCH,

Mr. J. B. GILPIN, 53, WILLIAM-ST.

MANUFACTURERS OF WATER WORKS ARTICLES, SUCH AS

BATEMAN AND MOORE'S AND CHRIMES'**PATENT HYDRANTS OR FIRE COCKS;**

IMPROVED SLUICE COCKS AND GAS VALVES;

CHRIME'S Patent High-pressure Single & Double Loose Valve & Screw Down Cocks;

PILBROW'S PATENT WATER WASTE PREVENTER;

PATENT ABSOLUTE WATER WASTE PREVENTER;

SIEMENS' AND ADAMSON'S PATENT WATER METER;

Eskholme's Patent Pneumatic Regulator and Valve Closet;

BELL AND CHRIMES' PATENT SERVICE BOX VALVE;

IMPROVED SELF-ACTING AND PULL WATER CLOSET;

LOWE'S PATENT EFFLUVIA TRAPS, BEGG'S IMPROVED.

GALVANIZED IRON TUBES AND FITTINGS.

Crosley and Goldsmith's Patent Compensating Wet Gas Meter.

GUEST & CHRIMES, in calling public attention to the above Advertisement, wish to say that samples of the various Articles manufactured by them may be seen at their

Dublin Branch—53, WILLIAM-STREET.

Mr. J. B. GILPIN Agent.

THE PATENT CRYSTAL WINDOW BARS, adapted for Domestic Windows, Shop Fronts, Conservatories, Skylights, Verandahs, Exhibition and Counter Cases, Aquariums, Fern Cases, etc., etc., combining perfect transmission of light, durability against rust or decay, and economy in the facility with which they are kept clean.

Aquariums, with Slate or Marble Bottoms, of various sizes, with or without Fountains, also of Glass.

Manufactured by **LLOYD and SUMMERFIELD**, Park Glass Works, Birmingham.

All kinds of Flint Glass, cut and plain. Coloured Window Sheet, Optical Sheet, Coloured Lenses, Glass Chandeliers, &c. Agents at Dublin—Messrs. SITHORPE and SON, Cork-hill.

IMPORTANT

TO ARCHITECTS, CONTRACTORS FOR CHURCHES, CHAPELS, SCHOOLS, AND OTHERS,

F. SWINBURN'S TRANSPARENT STAINING AND ANTI DRY ROT FLUIDS.

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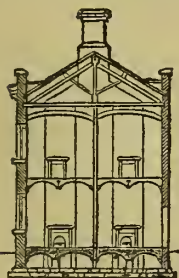
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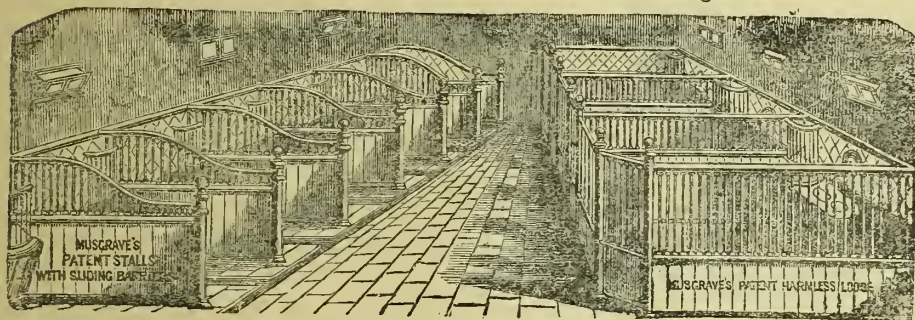
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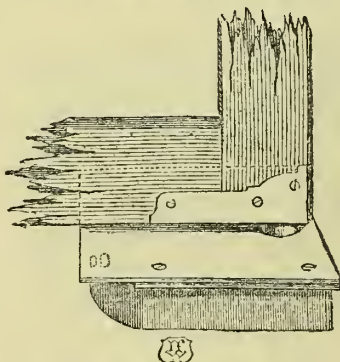
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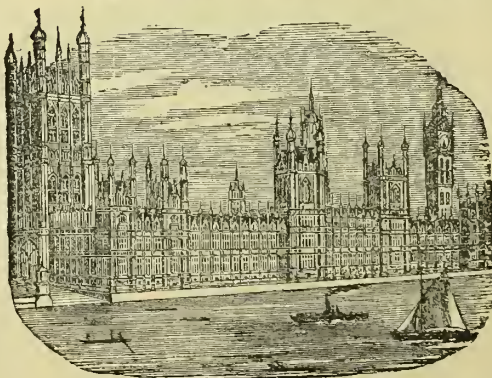
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VOL. VIII.—No. 159.

THE REFORM IN THE IRISH RAILWAY SYSTEM.



THE minimum of convenience combined with the maximum of extortion is Mr. Gregory's not uncalled for definition of our railway system in a recent debate in the House. It is re-assuring to find such a statement received on all sides with so little contradiction, and to observe the temperate consideration which both the Government and the opposition appear disposed to give to the question of Irish railway reform. The proposal that the Irish lines should be taken up by Government—under powers presciently provided for in the infancy of our railways—has, as a matter of course, been received with sneers and taunts by a section of the press and the public whose interests or prejudices make them peculiarly touchy on the subject of Government aid in the form of subsidies to anything purely Irish. Already the unexpected favour with which Mr. Gregory's motion has been received is beginning to excite murmurs of discontent in such quarters, and, abandoning arguments against the principle of Government aid which have been in vogue heretofore, under the pressure of a foregone conclusion, a cry is being raised of 'pity the poor English lines which are not paying good dividends,' likewise! It would be unjust and ungenerous to argue that *cateris paribus* an English line should not be entitled to the same consideration as the Irish one, but the cases under argument are wholly dissimilar. It is not a comparison between one line here and another there that is to be made; it is a comparison between the relative conditions of two countries—a great and a little one—and the comparative advantages conferred on each by its *entire* railway system. The placing of line against line would be only part and parcel of that narrow-minded policy and exaggeration of details which has been the curse of Irish railways. Has the Irish railway system or has it not fulfilled those golden promises to which we looked some eighteen years ago? Has it increased in prosperity, or has it even patriotically and unselfishly developed the resources of the country? We know, all of us, that it has not done either the one or the other, but we join issue on the matter of fact as to how much or how little of this is due to the management or mismanagement of railway boards, and how much to the inevitable circumstances of the country in latter years. The diminution of the population is not sufficient to account for such a history of utter failure. The cause appears to us to lie with the superabundance of cooks presiding over the railway pot, or rather pots, for each little knot of *chefs* appear to manipulate their own little mess in their own little corner after their own inner lights. Those thirty-seven chairmen, with their thirty-seven deputy-chairmen, their thirty-seven boards of directors, and their thirty-seven staffs of officials, all sedulously "padding their own

canoes," are at the root of the evil. And yet this whole regiment of conflicting cooks do not preside over a greater mileage of railway, taken altogether, than one English company, nor nearly so much. The policy which has been pursued by all these boards towards the goose that *ought* to lay them golden eggs is no wiser than that of the youth in the fable who possessed that desirable bird. Where traffic has gone down or not improved, fares for goods and passengers have gone up: a shortsighted policy, suicidal for the interests of any company itself, and disastrous to the interests of the country at large. To any intelligent observer travelling through Ireland his natural impression would be, that railway companies should look for their chief source of revenue to the third-class passengers, a fact fully borne out by the test of statistics; as, for instance, in 1863 receipts were as follows:—First-class £201,000, second-class £260,000, third-class £325,000; and yet in the face of this everything imaginable appears to be done on some lines to stifle and discourage this very class of traffic. Carriages are of the most uncomfortable description—although Pat is not the man to mind that much—and parliamentary trains are run at times of the day apparently selected with the most perverse ingenuity. The average charge per 100 miles, as is well known, is upwards of 8s., and yet Continental railways can afford to carry the same class of passengers at charges varying from 3s. to 4s., and in few cases as high as 5s. Mr. Haughton, the chairman of the Great Southern and Western, before the commission objects to the issuing of all third-class return tickets on the ground of fraud—even on market days,—and even says, "it is no use to issue them, *nor is there any traffic of that kind.*" That this is not a fact is sufficiently proved by the statistics we have quoted, and by the success which has attended a contrary policy latterly pursued by the Midland Co.; and yet even here, we have learned, the more enlightened state of things is less due to the wisdom of "the board" than the intelligence and common sense of their managers, who established it in the teeth of some opposition. The great mass of the moving population of Ireland is of this third-class, and no one is more ingenious in finding other modes of locomotion, and saving his small stock of coin by the way, than the Irish countryman.

This is the experience in a small way of an intelligent railway manager who leased a short line on his own account from a company:—He tells us, "when I came down here first, and watched my empty trains go by day by day, I felt rather bad, and I reflected from my old experience elsewhere that it would be better for me to fill my third-class with beggars at a halfpenny a head than have them empty. It costs me much the same to run a train empty as full. These first-class bloated aristocrats on which I am supposed to fatten are not as one to six of the rest of the moving population, and yet their carriages cost me four or five times as much, and they take a power of attendance, which I do not grudge them, but for which I have to pay. Now, as you know, all Irish countrymen are good 'travellers,' in their own sense of the phrase, which means 'legging' it, and these extra long-legged ones in this country peculiarly so. They can walk the entire length of my line without giving themselves much inconvenience, and, I need hardly say, sooner than pay me fourpence they did so, and I have often sat and seen them footing it along to the market by the road on the other side of the river, and felt like the angler—especially Dr. Johnson's one—and saw my

fish go by me and but a small share of fourpenny nibbles at my bait. Now there was another established functionary who shared my discontent, a 'feeder' of mine—although unsubsidized at that time—if I may so call him. This was an ancient ferryman who, I understand, had been used from an early period of the world's history to ferry individuals over this river at 2d. per head. I at once opened negotiations with him, and proposed, with due consideration for his vested interests, to pay him one penny per head (attached to the body) for every live countryman he brought me, on condition of his charging a maximum tariff of $\frac{1}{2}$ d. A new coat of paint for his boat carried the day, and, with our united suavity of manner and my reduced fares, I may say I have diverted a very handsome traffic from a large district of country on the other side of the river out of its own brogues into my railway carriages, and I am now prospering, thanks to my esteemed and best friend the third-class passenger, whose acquaintance I hope to continue to cultivate."

Nor has a more intelligent *regime* prevailed in the department of goods and cattle traffic. But one-seventh of the cattle moved travel by rail, and that this is not a penny-wise move on the part of the small farmer is proved by the fact that Mr. Allan Pollok, the largest and most intelligent farmer in the country, cannot afford to send his by rail. Mr. Barrington, the late Lord Mayor of Dublin, states, that it is *cheaper for him to send his goods to Liverpool and thence by sea to Sligo than to send them to Sligo direct*; and Mr. Bagot complains to the commissioners that goods are delivered *through Dublin* from English ports at cheaper rates than they can get them delivered from Dublin itself, and he is actually obliged to *send his goods to England, have them re-shipped and returned through Dublin to enjoy (?) the cheaper rates.* There is a mass of testimony to the same effect. How is it possible that the trade of any country could thrive when such idiotic policy prevails?

The scheme drawn up by Mr. Galt, and propounded by Mr. Gregory, for the transfer of the railways seems plausible enough. Mr. Gregory says:—"Mr. Galt divides the Irish railways into three classes. There are forty railways in full operation. Of these, fourteen pay dividends on original stock, and consequently on preference shares and loans. The second class are those who pay dividends on preference and guaranteed stock. Of those there are thirteen. The third class, ten in number, pay no dividends either to the original or preferential shareholders. Mr. Galt is of opinion that by offering the holders of preferential shares and debentures in the three classes $3\frac{1}{2}$ per cent. Government stock and a bonus of 10 per cent. in lieu of their present securities, there would be made a profit on class 1 of railways, which pay dividends to the original and preferential shareholders, of no less than £95,000 per annum; out of class 2, by the same process, £34,000 profit would be made; out of class 3, £11,000—in all £140,000 per annum. Then he looks to £110,000 annual saving from amalgamation—taking a lower estimate than Mr. Dargan—the total annual saving being thereby £250,000, or one-third of the present working expenses of the Irish railways, which amount to £750,000. But now to the debtor side of the account. Of course the first object of this operation is the reduction of fares. It has been calculated that a great relief would be given by a reduction on passenger traffic to two-thirds of the present tolls—that is throwing the chief reduction on third-class passengers, and by a reduction of merchandise traffic

of one-half. Nothing less than that would be satisfactory. But this would involve an immediate though not an ultimate loss of about £200,000 per annum on passenger traffic, and of £100,000 on goods traffic. But there remains another item not yet considered; and that is, the payments that would have to be made to holders of railway stock which has absolutely no marketable value—the lines which have not, do not, and will not, in all probability, ever pay the original shareholders one shilling. Still they live in hope, and their shares cannot and ought not to be confiscated. The amount of these shares come to £3,836,000 or £4,000,000. Now, if these shareholders were offered 5s. in the pound for their shares they would be most handsomely dealt by, and the offer would be received with thankfulness. That would amount to £1,000,000, and would represent an annual sum of £35,000."

The country will await anxiously the result of legislation on this all-important subject in the ensuing session. If the new Government inaugurate a scheme so hopeful as has been sketched, they will have at least a right to the grateful consideration of Irishmen of every shade of politics.

NOTES IN SPAIN.—III.

VITTORIA is a city possessing more than twelve thousand souls, the Gallicised origin of some of the inhabitants may be noticed from their avocations—the brilliant jeweller's window and the gay venta of the restaurateur being conspicuous—as one roams under the awnings of its square, or along the principal street of the town.

Immediately outside the city, and intersecting the Camino-real to Madrid, we observe the Ferro-carril (railway) to the same place; this is on the site of the plain of Vittoria where, forty-six years ago, English, Irish and Scotch valour made French intrepidity succumb, and put down for ever, the aspirations, designs, and graspings of Joseph Bonaparte. Strange! there is no monument there to tell the tale: I looked round in vain, there was

"No column trophied for triumphal show."

We put up for the night at a Fonda (inn) inside the gates—the hotel, Santa Maria I think it was called, where some of us were amused at one of our party breaking the mirror over the mantelpiece by placing a lighted candle under the glass and cracking it. "Longshanks" had good intentions, but was inordinately vain and extravagant, and foolish, like some of his countrymen hailing from the Kingdom of Cockaigne. Dickens hits off his character to life in his "Snodgrass." At present Mr. Snodgrass is pursuing his profession in India, I believe, under the Board of Works there.

The road from Vittoria to Haro, Miranda-del-Ebro and Logrono runs through a very interesting country—mostly oolite formation—small clusters of wild box indicating the places where the limestone crops out. When we came to cross the Ebro we met with a spur of the Sierra, which was all along in sight on our right hand since we left Vittoria. Met at Haro, a young engineer, a son of Colonel James, R.E.—a member of the staff of the excellent Charles Vignoles, Esq., C.E., &c.

Logrono is a stirring, well-built town on the confines of Castile and Navarre; it is a station for a regiment of cavalry; the Ebro divides it from the province of Navarre, and it has a fine old church in the principal street. The grand entrance is built in the old Arabesque style, adopted by the Moors when some of them became Christians: very florid, elaborate, and barbaric—there being no less than one hundred human figures carved over the entablature of the doorway. Santiago is painted on a white charger slaying the enemies of the faith *ad libitum*!!

I never beheld such a lustrous pair of black eyes as belonged to a young outcast gypsy girl who appeared to be abandoned by her people. She seemed scarcely fourteen years old, and carried a newly-born babe in her arms. I gave the poor thing a slight donation, and received a thousand gratias in return.

The "Alameda" at Logrono must look very gay of an evening in summer: it is outside the walls, and is the Hyde Park or "Phoenix" for the Logronians; there is a host of old marble statues of the kings, heroes, and poets of Spain scattered through the grounds—some minus an arm or leg, others, a sinister optic, ear, or nasal-organ.

I forgot mentioning an incident that happened to myself on entering Logrono. I got off the crowded

diligence and walked into the town, as I thought, before it. I missed my way to the gates, and when at length I found them they were locked. Now I had to exercise the "lingo," and with the voice of a Castellano, I shouted out, "Es esta el puerto, de Logrono?" "Ci, señor!" was the lazy response; the bolts were withdrawn, and a few minutes' walk by the dimly-lighted oil-lamps of the town brought me to the "Fonda," where the diligencia with the "Ingenieros Ingles" had arrived before me. Started next morning for old "Calahorra," made famous in Roman history. The country is one vast vineyard to the right and left of us, as we pursue our way through the Rioga country, Mont Cayo, and the mountains of Castile on our right, whilst the Pyrennees Orientales are on our left, bold, barren, and repellent—the fastnesses of the Guerillas of Arragon and Navarre.

There is a pueblo midway between Logrono and Calahorra; it stands off the left of the high road a short distance. This place has been the scene of many a bloody deed, as here dwelt the Empecinado and Guerilla during the Peninsular War. The sides of the Camino-real attest this. I counted no less than four dozen of rude crosses erected close to each other on the spot. I thought it the site of a conflict of the late civil war between the Carlists and Christinos.

General Espartero's residence we passed on our left, where he is pursuing peacefully, "like Cincinnatus of old," the life of an agriculturist, turning the spear into a pruning-hook.

Calahorra was in its glory 2,000 years ago. It was called by the Romans, Callurgis—in the Castellana it signifies "hot-oven"—*calla*, means hot, and *horra*, oven: this is the derivation I arrived at from some of our party who knew more of the Spanish than myself. It is situated on the summit of a hill beside the public highway that leads to Alfaro and Tudela, and may be seen on all sides for twenty miles around—the river Cidacos washes its southern base. The bed of this river is a quarter of a mile in width near the town; yet, during my stay there, which was for three or four months, it had not as much water as would keep a mill-wheel of twenty horse-power working.

Calahorra possesses two very old dusty churches: the one in the square of this badly paved and worsely lighted town has such queer Masonic signs on the grand entrance that it occurred to me it would be a poser to those divines of the Church of Rome who declaim against we brothers of the "mystic tie," and all members of that holy institution.

On Good Friday I was accidentally present at a remarkable procession of monks or Jesuit priests to the above church: they bore on a platform the whitest of skeletons (I suppose to represent the burial of Christ!), and buried it singing in mournful cadences, "Dies iræ, dies illa," &c., &c.

I had my ideas awakened on this subject; but a truce to all polemical matter in your impartial journal.

Southwards about one league we meet the Saragossa railway, which crosses the Ebro here by an iron lattice-bridge, with cylindrical tubes as piers. The contractors are Messrs. Kinneard, of Glasgow. The works on this line—though executed by French engineers—are substantially built; the span of the bridge about 1,000 feet, depth of lattice I think about 14 feet, five opes for waterway.

The country along here is very much cut up and disfigured by "Barrancos;" these are yawning chasms caused by the earth being from time to time swept and frittered away by the rains which come down from the hills. Flocks of sheep may be seen tended by their shepherds, dressed in primitive fashion—shirtless—with the eternal sheepskin as gaberline, and the patriarchal crook symbolical of his office. There are no fences in Spain, so that "El pastor" may roam undisturbed through olive grounds and vineyards to the "corral" (sheep pen), where he reposes for the night.

The "French," or red-legged partridges are quite numerous and daring along the Ebro. I shot several while walking over these wastes. The bird is comparatively tame about here, and scarcely requires a dog in finding them out. Persons may have a battue by walking them up, having to quicken his pace as he comes closer.

Outside the northern gate of Calahorra, 150 or more feet over the Ebro, tradition says there was a great naval battle fought before Christ; the place is called a "Naumachium;" it seemed to me more likely to be the site of a reservoir, or the place where Roman games were held when Spain was a province of that country.

The town was besieged by Hannibal, and if the walls were not more formidable than they are at this day, it could not hold out very long; they are mostly formed of small stones and rotten mouldering clay, the abodes of the owl and the bat, and the lively and watchful lizard.

We went over one evening to see Alfaro, about three leagues south of Calahorra; it is a town about the same size. The population of these two towns, men, women, and children may be seen daily astride their mules and donkeys, going out to cultivate their

little plots of pimiento and ayo (pepper and garlic), some of their little farms being as far as a league or two; there being no such thing in this part of Spain as a homestead or "farm-steading."

Alfaro is situated on the river Allama—both are Moorish names. The church again is the principal building in the town. It is a pile of decaying brick with a façade that reminded me of King's Cross Station, London.

The meadows along the river were incrustated with a coating like hoar frost, but which seemed to taste like soda the mornings of the spring that I spent there. Went to the theatre the first evening I remained here. The drama was taken from that part of the New Testament where Herodias requests Herod to bring her the head of John the Baptist,—erough when I say the performance was a bad one, and was not much applauded; but the Spanish are a curious people, and, like their neighbours the French, see no harm in dramatising sacred subjects.

Met Mr. Vignoles and his well-appointed and efficient staff, and went to work in earnest now. The thermometer ranging daily from 90° to 110°, it being harvest time—though only in the month of May—at least hay time, and the maize was being cut down.

Dundalk, 23rd July, 1866.

(To be continued.)

ARCHÆOLOGICAL INSTITUTE.

THE ANNUAL CONGRESS.

THE Annual Congress of this Institute was held in the Guildhall, London, on Tuesday, the 17th ult. This was the first meeting of the kind held in London since it was established twenty-one years since. It was expected that the Prince of Wales would have taken the chair. The Lord Mayor, however, presided, who—in opening the proceedings—warmly welcomed the noble president of the institute and all who were seeking to extend its advantages and promote its welfare. This society, he said, had now attained to its majority, having been established for twenty-one years, during which time many of the noblest and most ancient churches, towers, and other edifices of antiquity in the provinces had been explored by its members. It had now returned to hold its congress in the parent city, and he assured all present that the corporation would not be reluctant to co-operate with them in their endeavours to extend the reverence for the architecture of the past, and to raise their institute to a high point of efficiency and development.

Lord Talbot de Malahide next spoke, and observed that not only in that very hall where they were assembled, but all around them, there were many objects of antiquarian interest worthy of investigation. However much we might admire the efforts of the Emperor of the French to beautify Paris, and might sometimes feel the desire to see our own capital for a time under similar improving hands, yet on mature consideration we should be sorry to have it done, for Paris is changing its historic bearing, and in becoming more like a city of the New World, is losing fast its character as one of the ancient capitals of Europe.

Mr. W. Tite, M.P., followed with a few words as a citizen of London upon the value these annual congresses had in stirring up a love for antiquities, and drawing attention to the desirability of their preservation. In the provinces immeasurable good had thus been done, and he hoped that the like benefit would be manifested from their assembling in the metropolis. The fine church of St. Bartholomew was now being preserved with much care; St. Helen's, Bishopsgate, and the church in Austinfriars were worthy of the like attention. London now was a city of offices, but in olden times it was a city of churches. Doubtless, numbers of the antiquities of London must bow down before the improvements and necessities of modern progress, but much might be preserved; and it was one of the distinct objects of the present congress to interest the citizens of London and those present at the meeting in the preservation of its ancient objects.

Mr. Beresford Hope, M.P., also acknowledged the welcome accorded to them, and observed that, after having devoted themselves for so many years to provincial archaeological explorations, he feared that they would find themselves, on returning to the metropolis, very much in the position of a lady who had been the cynosure of a county ball-room, and the admired of all country dancers, if suddenly called upon to take the principal place in the height of the London season. But the institute had returned to the spot where it had its birth, and which was richer in archaeological interest than perhaps any other in the kingdom. They intended to enjoy a full week, and the programme of each day's proceedings would, he believed, satisfy everyone. Mr. Hall, who was the most despot, but at the same time the most kindly tyrant they could submit themselves to, would be their guide that day to the Church of St. Bartholomew the Great and St. Helen's, Bishopsgate, both replete with inte-

rest. The fine church in Austinfriars, which had been entirely restored under his auspices, might, if they behaved well, be added to the places visited; but Mr. Hill reserved that as a special treat. On Wednesday there would be an excursion to the noble old Abbey church at Waltham, the church which was so closely connected with the overthrow of the Saxon and the establishment of the Norman dynasty. The company would there be under the guidance of Mr. Freeman, who would describe the architecture of the church. In the evening there would be a *conversazione* at the South Kensington Museum. On Thursday Mr. Gilbert Scott would deliver a lecture on "Westminster Abbey," in the Chapter House, which he hoped would be seen by the members for the last time in its present condition; and he would afterwards accompany visitors in an examination of a structure of which every Englishman felt proud, associated as it was so closely with the greatest and most memorable events of our history. On the following day, Mr. Clarke would discourse to the visitors at the Tower of London. An excursion to Windsor and Eton would occupy Saturday. The Dean would receive the company at Windsor, and by the special permission of the Queen, they would be enabled to inspect some remarkable portions of the early structure of the state apartments. Mr. J. H. Parker would here be their guide, while at Eton the Provost would receive the party, and Professor Willis would accompany the visitors over the college. St. Paul's Cathedral, Lambeth Palace, and Hampton Court were in the list for other days, at which places gentlemen who had made them their special study would point out the leading features of the buildings. At Hampton Court Mr. Scharf would discourse upon the paintings, and the Bishop of London would on the same day receive the party in the grounds at Fulham Palace. He hoped that brief outline would show that, apart from the evening meetings and those that must be held for the transaction of business, the council had shown themselves anxious to provide an ample and varied bill of fare, and that a still greater measure of success would attend the institute in future than it had enjoyed in the past.

The Bishop of Oxford said that if in this great city, the heart of a country, the acts of renovation proceeded at too swift a rate to be agreeable to archaeologists, the streets of London must be admitted to be in a most antiquarian condition, or he would not have been so late in coming to the meeting. For three quarters of an hour he had been on the road from the Waterloo Station, the delay being caused by a single cart with six deals, which, by a judicious twist at every turn, managed to completely block up the way for the whole line of omnibuses and carriages. Renovation, however, in London had not destroyed all its monuments; and, indeed, although it proceeded at a greater rate, it was not so thorough as in provincial places. He hoped the result of the present congress would be, by bringing under their notice hundreds of relics still preserved in obscure places, to cause the members to return to their homes regarding London not only as the centre of all novelties, but as the best preserver of antiquities.

Mr. Hill then further explained the intended proceedings of the congress, and, after votes of thanks to the Lord Mayor and the President, the members withdrew to inspect the crypt under the Guildhall and the City Library and Museum. The latter, combined in the same edifice, are little known, although open daily to the public, and were inspected by almost all with the enjoyment of new attraction. In the library are many rare and valuable books, but their number is not great. The museum, though small, contains some very interesting objects, classified in groups. In one case are Roman and other shoes, sandals, and crepidæ; in another every conceivable variety of antique tobacco pipes; in others swords and weapons, knives and spoons, rings, locks, spurs, bronze celts, and stone arrowheads, watches, pilgrims' signs, and deeds and medals.

In the Town Clerk's Office there was a really valuable selected collection of manuscripts and charters made by Mr. Charles Bailey, of the Architect's Office, to whom visitors were greatly indebted for the many explanations he gave as to their various points of interest.

From the Guildhall the members proceeded to St. Bartholomew's Church in Smithfield, now in progress of restoration, under the direction of Mr. Slater, and Mr. Lewis. Mr. Tite, M.P., gave a brief history of the church, from its foundation by Rahere, the minstrel and jester of Henry I., who appears to have been a prosperous courtier, as well as a merry member of a merry court. Towards the close of his life he made a pilgrimage to Rome for the good of his soul, and on his return had a horrible dream, in which he fancied himself on the brink of the bottomless pit, and about to fall into it when he was rescued by the sudden appearance of the good St. Bartholomew, who directed him to build a church and hospital in a certain spot, which, after a little labour the pious jester discovered. The site was formerly the

execution ground of the city. Where this church now stands is where the martyrs suffered, and where the sick now repose in the wards of the present hospital is over the spot where the hoots stood from which the authorities of the City witnessed the horrible scenes that have been enacted. The church was begun by Rahere in A.D. 1102, and the east portion completed by him in A.D. 1123. A further portion was added before 1145, when Rahere died, his tomb, restored by Prior Bolton in 1509, being still near the altar. A window looking into the nave from the prior's lodgings has the rebus of this prior, the holt-in-tun. Robert Fuller was the last prior.

The next church visited was St. Helen's Bishops-gate, which was described by Mr. Wardmore, the architect by whom the restoration is being directed. The existence of a church on this site may be traced back to very early times, a record referring to an earlier period occurring in A.D. 1010. The foundation of the priory was laid about A.D. 1212, and the sheriff of London in 1308 was a liberal benefactor. The principal features of the church are its two parallel naves and the numerous tombs. That of Sir Thomas Gresham is a fine one, as are also those of Sir W. Spencer and Sir Julius Caesar. It was one of the churches which escaped destruction by the Great Fire. Here also is the tomb of the singular Francis Bacroft, who founded the almshouses at Mile-end, and who lies in a locked vault in an unscrewed coffin, having left an annuity to the Mercers' Company to look occasionally after his body.

In the evening the members of the Congress were entertained at a brilliant *soirée* at the deanery of Westminster. The numerous reception-rooms kindly opened by Dean Stanley to the archaeologists, visitors, and ladies were densely crowded, as was also the famous Jerusalem Chamber (its remarkable tapestry being much admired) and the school-room, where a concert was given by the Abbey choir. Every one walked on the leads to view the Abbey. In all the rooms cases of unique and most valuable deeds, charters, and relics were displayed, over which crowds lingered with the greatest interest—the culminating point of attraction being the wonderfully illuminated folio missal of Littleton, Abbot of Westminster, in the time of Henry III.—the missal being in date of execution about A.D. 1370.

SECOND DAY.

On Wednesday the congress resumed its sittings in the large hall of the Jernyn-street Museum.

In the morning Sir John Lubbock opened the new section of pre-historic archaeology, in the lecture-hall of the Jernyn-street Museum, with a lucid address, in which he detailed the general method of argument used in respect to the deductions as to the early history of mankind derivable from the relics of human handiwork in superficial geological deposits, caves, early sepulchres, and refuse heaps. He rightly contended that pre-historic archaeology was not limited to the accounts given by ancient writers, but that by proper methods of reasoning it was equally able, with other branches of research, of being raised to the dignity of a true branch of science. The methods now being pursued he considered as those adapted to mark the right road to knowledge; and after noticing the valuable labours of M. Lartet and the late Mr. Christie, concluded with an emphatic indication of the necessity on the part of Government to appoint some one to look after the preservation of our national antiquities.

At the Royal Institution the Very Rev. Dean Stanley delivered an inaugural lecture in the section of History upon the early history of Westminster Abbey. He first pointed out the wild state of the Isle of Thorns at the earliest time of which any reference is made to it in ancient documents, when it was a dense thicket inhabited by the primeval native ox and deer, and occasionally a lurking place for abject men. He then described its half-island, half-peninsular character, and indicated in the present streets the course of the ancient branch of the Thames by which it was isolated, and pointed out the position of the isthmus of gravel which at low tide connected it with the main land. The present Princes-street marks the course of the "Long Ditch," the stream from which fell into the Thames west of the Houses of Parliament in Millbank-street, so called from its having been near the site of the abbot's mill. Two circumstances especially, in the dean's opinion, had contributed to the first founding of an ecclesiastical building on this wild and insecure spot—the gravelly soil and one pure spring of water. Whether this first church was founded by the very ancient Lucius, or Siebert, may long remain as doubtful as the personal history of those kings; but certain it is, that but shortly before the foundation of the present abbey was commenced by Edward the Confessor, the Isle of Thorns was a dangerous wilderness, with a little church dedicated to St. Peter in its midst. It was then in reality what it is styled in the earliest charters of the abbey—the "terrible place." Our national sanctuary at Westminster markedly owed its origin to the cha-

acter, and even the special fancies of the individual man. Childlike, simple, he spent his time in church, when not spending it in hunting; and two particular fancies he had in his devotions. Two saints were his patrons or his predilections—St. John the Evangelist and St. Peter. The last was regarded as his special protector, and when Edward was in Normandy he vowed, on his return to England, to perform a pilgrimage to Rome. In after years, when this event occurred, he desired to perform this undertaking, but in consequence of the troubled state of the country, his nobles dissuaded him from the journey himself, and urged him to send a deputation to the Pope for dispensation, which was granted on the condition that he should restore some church of St. Peter. There might have been many to select from, and possibly Winchester had a narrow chance; but what he fixed his mind upon was the little church in the *locus terribilis*, or Isle of Thorns.

Probably there might have been some desire to counterbalance the influence of the church of St. Paul, but, however that might be there existed in after times a constant rivalry between the two churches, and an almost equal jealousy between the citizens, whilst especially great was the antagonism between the bishops of St. Paul's and the abbots of Westminster. The legend of the consecration of the Confessor's abbey portrays this antagonism in an amusing way. Melitus, the first Bishop of London, had prepared to consecrate the abbey when Edrie, a fisherman on the river, was towards night signalled by a venerable man on the Lambeth shore, who demanded passage across. When the fisherman had landed him on the island a host of angels surrounded the venerable passenger, who turned out to be St. Peter himself, and who forthwith consecrated the edifice. When Melitus came to perform the office next day he found his work anticipated.

The Dean, in conclusion, dwelt on the style of the early architecture of the abbey, and pointed out that Edward the Confessor, although a Saxon by birth, received his entire education in Normandy; hence, influenced by his scholastic tendencies he determined to build a church as like those in Normandy as it was unlike anything seen in England before. Deeply endeared as Edward was to the Anglo-Saxon nation the edifice he reared was from that cause the more deeply venerated.

After the conclusion of the dean's address, Mr. Freeman gave an eloquent account of Harold as the founder of Waltham Abbey. He passed briefly over his general life, but detailed with much pathos his last battle and death, and his first burial, at the Conqueror's will, beneath a cairn of stones on the sea shore of Sussex. Thence the body of Harold was subsequently removed to his own abbey of Waltham in Essex. All the isolated and often seemingly contradictory passages in the old chronicler's writings, Mr. Freeman wove most skillfully into a connected and poetical but most instructive narrative. He pointed out how education occupied a great place in the scheme of Earl Harold, in rebuilding the small edifice founded by Tovy on a grand scale, and appointing to it a body of secular canons, the most practical and useful class of priests.

In the afternoon an excursion was made along the Great Eastern Railway to the remains of the venerable abbey itself (now recently restored as the parish church, under the direction of Mr. Burges), when Mr. Freeman energetically contended for the earlier portions of the existing remains as being portions of the original abbey of Harold, consecrated in A.D. 1060. The abbey continued in the hands of the secular priests until the time of Henry II., who put them away, and substituted monks of St. Austin in their place. It was pointed out that this was a parochial as well as a collegiate church, and having been at a later period divided into two portions, one east and one west of the central tower, by a reredos across the edifice, against which the altar of the parishioners was placed, whilst the monks had theirs in the usual position against the east wall, it was in this way that at the time of the dissolution the transfer of one portion only took place, and this portion, probably containing the tomb of Harold has been wholly destroyed.

The evening meeting was held at the Royal Institution, when the Rev. J. P. Greene read an able paper "On Thomas à Becket." A *soirée* also took place at the South Kensington Museum.

(To be continued.)

As an instance of the stagnation of trade in the south of Ireland, compared with the enterprise of the north, we may mention that a steam corn and saw mill in working order—a large concern, where a general wholesale and retail trade is being carried on, in a most eligible situation—two timber yards used for that trade, as well as the iron and coal business, with other premises, all situated in the town of Tralee, were put up for sale in the courthouse of that town on the 17th ult., but not a single bid was made.

THE LONDON REVIEW ON THINGS IRISH.

Put an Irishman up to be roasted, says a proverb, an' presto, a countryman will be forthcoming to turn the spit. If you want to vilify or abuse anything Irish, by all means set an Irish "correspondent of a London journal" to the task. The *London Review* has kindly condescended for some time past to enlighten the world at large on things ecclesiastical in Ireland, in a series of impertinent and personal articles, which it modestly calls in large type, "The *London Review* Irish Church Commission." It is exceeding kind of the *London Review* to undertake the functions of Parliament gratuitously, but were it known that the great *London Review* special Church "commissioner" is an obscure writer for the Dublin press, we think some Irish readers would conclude that irritation at the ignorance and assumption of the articles in question were thrown away. That it is so we are credibly informed. The indignation aroused has been chiefly in ecclesiastical circles, for our "commissioner" has managed to offend clergy of both creeds by his very uncalled-for meddling. Our "commissioner" takes the widest of ranges. He is an Ecclesiast, an expounder of the most sacred doctrines among his secular pursuits; he is an inquisitor into private and personal concerns; and, what affects us more especially, an amateur architect of no mean pretension at any rate. The value and general tone of his *ec cathedra* utterances may be fairly estimated from his criticisms on things in Kilkenny, to which our attention has been directed by a respected correspondent. Speaking of the Black Abbey, to which we recently referred, he kindly tells us:—

"The Abbey was founded in 1225 by the Earl of Pembroke, who was buried there. It belonged to the Dominican order, to which it was restored by the Reform Corporation. The brethren undertook the restoration of the church in such a manner that the whole when complete should be ornamental to the city, and should be a striking monument of the good feeling and liberality of the age. But the attempt to accomplish this object has been a melancholy failure. Very little of it has been in keeping with the original style of the building, while the tawdry decorations within are in the worst possible taste, contrasting painfully with the solemn grandeur of the original. This contrast has been heightened to the utmost by the erection of an altar, presented by a wealthy citizen, which cost £500. It is a piece of elaborate finery, which inspires anything but reverential feeling, and reminds one of the bridal architecture of an artistic confectioner. The restoration of St. Canice is conducted on the right principle of making the cathedral as like as possible in every respect to what it was originally. The Dominicans should imitate this good example, if it would not now be a work of supererogation after the erection of the new cathedral. Still, if there was room for the abbey church in old times, there ought to be room for it now. The new cathedral is constructed of the best materials, planned after the finest models and finished in excellent taste, without any incongruous ornamentation."

We do not think the architectural critic is entitled to much respect who speaks of Messrs. Earley and Powell's beautiful altar and reredos as a "piece of elaborate finery," reminding one (only one, we would say, and that the "commissioner") "of the architecture of an artistic confectioner," and further, of the new Roman Catholic Cathedral being "planned after the finest models, and finished in excellent taste, without any incongruous ornamentation." This is a little too good. Other architectural criticisms which we have seen from the same pen are pretty nearly as trustworthy. Here where the writer is personally known, the pretension and absurdity of these articles can only excite contempt, but that they are read by Englishmen proverbially ignorant of the very subjects of which they treat, and so far eminently mischievous, is the only point entitling them to any notice or comment whatever.

THE O'CONNELL MONUMENT.

REJECTION OF LATEST DESIGNS.

AFTER a rest of nearly two months, the committee entrusted with the getting up of the National Monument to O'Connell held a meeting on Wednesday last, at the City Hall, Cork Hill, when Mr. James Whelan, T.C., occupied the chair.

Our readers will recollect that three gentlemen were called upon in May last to furnish drawings, for

which a sum of twenty pounds each was to be paid. Two of the gentlemen named (Messrs. Butler and Madden) sent in sketches, and the third (Mr. J. J. McCarthy) declined. The sub-committee appointed to report on the designs sent in, having met, came to the following resolution:—"That while we admit the designs presented to us possess meritorious features, we do not recommend for adoption any of them, but respectfully direct the attention of the committee to two of the designs, one from Mr. Bolger, and the other from Mr. Butler, as possessing merits worthy of consideration. It is to be observed that Mr. Bolger was not one of the three gentlemen selected by ballot on the 4th of May last."

Mr. Crean (hon. sec.) read the following observations made by Canon Pope at the meeting of the sub-committee:—

"He had been requested by this committee to favor them with his opinion on the architectural designs presented for their inspection. He had previously expressed his opinions and the reasons upon which they were grounded, and had placed them at considerable length before the general committee and the public, and that he should now merely reiterate in a few words what he had before expressed. Without at all intending to depreciate the merits of the designs before them, he wished to express himself as entirely opposed to the idea that the design for the O'Connell Monument should assume an architectural character. His reasons were these—because he considered that architectural structures detracted from the simple, bold, and expressive effect of a statue or sculptural group, and because he considered that an architectural structure erected on the intended site would contrast most unfavorably with the lofty column of the Nelson Monument, and because he considered an architectural structure on that site would materially injure the perspective beauty of one of the finest streets in the kingdom. He was of opinion that the monument should consist of a sculptural group, erected on the most simple and unadorned pedestal—because he desired that its features should display the highest order of art, and that is sculpture—because, as the nation contributed the funds with so much liberality and placed them at our disposal, he said he aspired that the monument both in design and execution should rival the finest specimens of sculptural art in Europe—that it should be a treasure to our city—the attraction and admiration of strangers—conveying a faithful contour of our great tribune—constituting a silent but eloquent historical record—telling its tale intelligibly and unceasingly—pronouncing the panegyric of his generous and heroic efforts to ameliorate his country—transmitting to future generations an expression of the nation's gratitude—and presenting a group of figures not merely to fill the eye with beauty, but to fill the mind with ideas, with historical reminiscences, with salutary lessons. If you ask him what this design should be—this, he said, is our difficulty—this is the pearl we are seeking, and for which, if found, we are willing to pay a high price—and which, though long hidden, he said he did not as yet despair of finding."

It was agreed that the report of sub-committee should lie on the table for a fortnight.

Mr. Crean referred to some complaints that had been made in reference to the manner in which the designs which had been sent in for competition had been treated, and said that every care had been taken of them—that they had been put in their proper cases, and were in the waiting room of No. 1 Committee. He had replied to a great many communications informing the gentlemen who had competed that their designs were here, and would be delivered to any properly authorised person. It was not usual for the Hibernian Academy or other bodies to whom designs were sent in to send back those designs. The practice was to deliver them when called for by some properly authorised person.

In reply to the chairman, Mr. Crean said that the sum of £9,800 of the O'Connell Monument Fund was lodged in Government securities to the credit of the trustees. On the 4th of May last Alderman Reynolds had drawn out the half year's interest then due, amounting to £142 14s. 10d., at £3 per cent. on £9,000. This interest was also lodged to their credit. The principal could not be drawn without the concurrence of the several trustees, but any three of them were empowered to draw the interest.

Mr. Crean mentioned that, according to the resolution under which Mr. Butler and Mr. Madden had sent in designs, they were to be paid £20 each.

[Respecting the careless treatment given to the unreturned designs sent in for first competition, and on which we have received so many communications, we repeat our statement made in last No., and which we believe to be quite true. Will the honorary secretaries deny having been several times applied to by our subscribers whose letters have appeared, for their drawings to be returned? Surely the courtesy of replies, even from unpaid honorary secre-

taries, might have been looked for. We trust that the return of all the designs referred to, and in a proper state, may prevent recourse to the law, and then to "the law's delay."]

CHESTER TOWN HALL.

It is satisfactory to note that the disagreement at Chester Town Hall, involving matters of deep importance to the building trade, is likely to be brought to a satisfactory issue. The case is of interest to us in particular, as an Irish architect and clerk of works are concerned. The attempted tyranny on the part of the masons is so very unreasonable that we cannot but desire to see them suffer an abject defeat if such monstrous folly is persisted in.

The *Cheshire Observer* says:—The Town Hall question seems at present to lie in a transition state. The works however are at a complete stand still. We believe we are correct in stating that the Town Hall Committee have ordered that the legal ten days' notice he given to the builders to proceed with the works, as no sufficient reason has been adduced for the delay. On the other hand, the executors of the late Mr. Clarke are negotiating the transfer of the contract to Mr. Hughes, of Aldford, and it is said that in all probability he will accept their offer. Should this be the case the Council will then be asked to sanction the change, and knowing the manner in which Mr. Hughes carries out his contracts, we have no hesitation in saying that should the Council confirm the transfer, the hitherto unfortunate building will be carried on with some spirit. And then arises the question—How will this affect the strike? The *casus belli*, the clerk of the works, still remains; the strike has been declared by the executive of the masons' union to be "illegal;" and Mr. Hughes having all the other large jobs in the neighbourhood, will be in a somewhat better position than the Messrs. Clark to oppose what is considered by most people to be a most arbitrary proceeding. It is hoped, however, that the men will consult their own interests by commencing work, and that the public will now have heard the last of the "strike at the town hall."

NEW ROMAN CATHOLIC CHURCH
AT PRESTON

WITH this issue we present our readers with a sketch of a new Catholic Church to be built at Preston, Lancashire, by Mr. E. Welby Pugin, son of the late Augustus Welby Pugin. The cost will be about from £7,000 to £8,000.

CORRESPONDENCE

ARTISTIC PLASTERERS.

TO THE EDITOR OF THE DUBLIN BUILDER.

SIR,—I most respectfully beg to call the attention of the public to some observations which appear in your journal to have been made by Mr. Geoghegan at a lecture given by Mr. Drew.

The former gentleman, in speaking of the plastering of the Royal Bank, complained that owing to the absence of one skilled modeller he was obliged to apply for an extension of time to the directors; this would lead the public to imagine that on this one man depended the means of having the work completed.

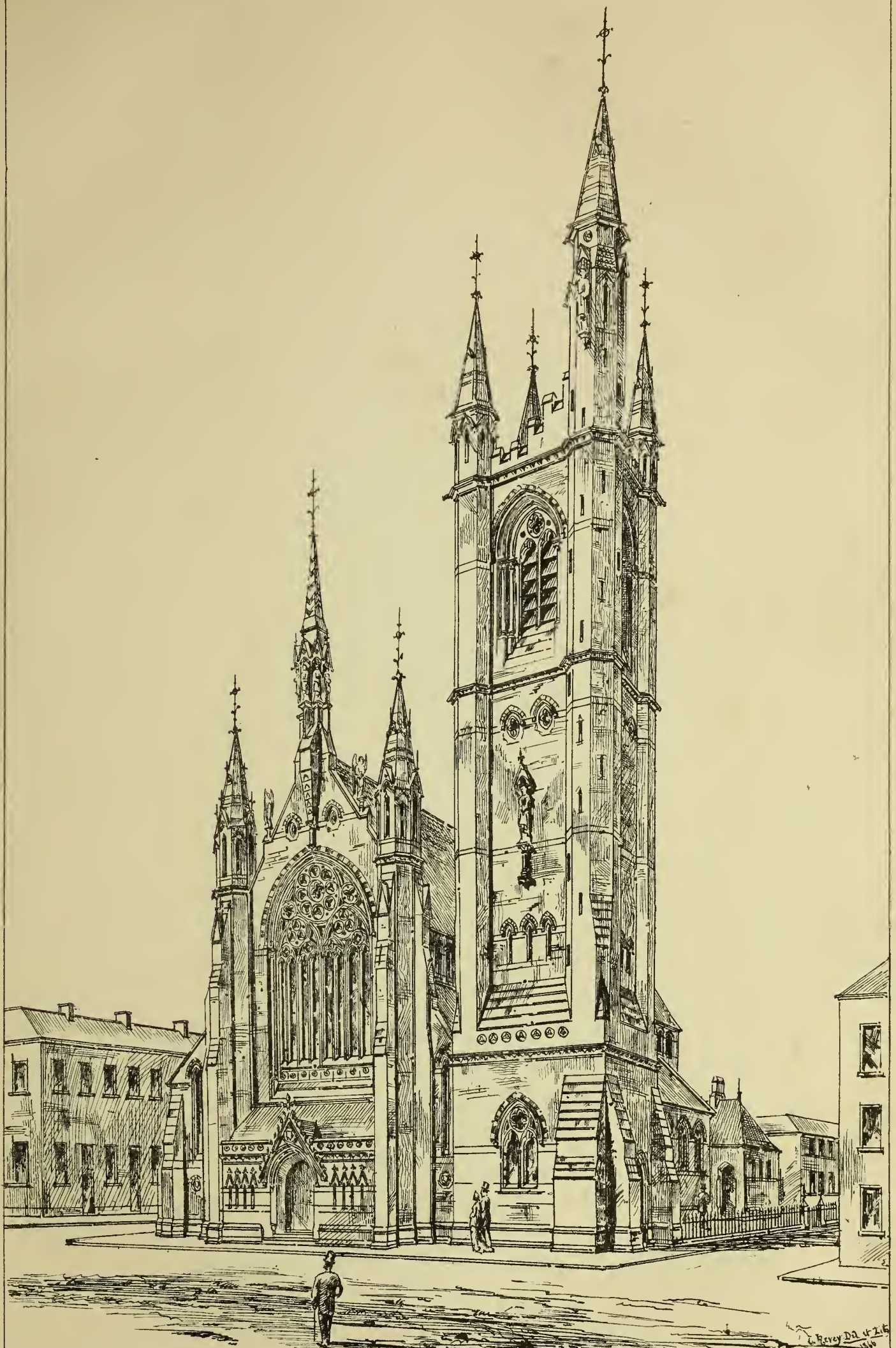
May I, through your journal, inform Mr. Geoghegan that from my personal knowledge of the plasterers of Dublin, and of the modeller whose name he brings before the public in no very enviable light, I am able to state that there are many workmen in this city fully as capable of undertaking the work as the man he mentioned, who is a member of the Society of Regular Plasterers, and had Mr. Geoghegan applied in the proper quarter, he would not have had to make the humiliating request he did to the Board of Directors, but could have sent to him many "successful modellers."

May I hope, sir, on behalf of a numerous and intelligent body of tradesmen—constant readers of your journal—that you will give insertion to this from,

Your obedient servant,

GEORGE O'KELLY,

Secretary, Amalgamated Building Trades.



New Catholic Church at Moor Park at Preston by A. Welby Pugin Archt.

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ON SUBMARINE EARTHQUAKES AND VOLCANOES.*

DURING the month of November, 1865, I experienced in the South Pacific Ocean some of the phenomena attending submarine volcanic action. This circumstance, together with subsequent opportunities of collecting information on the subject of marine earthquakes, has suggested my bringing this paper before the Society this evening.

I have succeeded in discovering the records (which I have every reason to believe authentic) of more than thirty instances of volcanic disturbance in the Atlantic Ocean, between the years 1740 and 1860. A short abstract of some of the most important I beg leave in the first instance to draw your attention to.

There is a space on either side of the Equator, between 7° N. and 3° S. Latitude, and 16° to 20° of West Longitude—an area measuring some 600 by 800 miles—which may be deemed one of the great submarine centres of volcanic action; within the limits of this space *smoke, steam, and ashes* have been seen to issue; vessels traversing it have experienced shocks, more or less violent, and in some instances have struck on unknown rocks, subsequently not to be found.

In the year 1813 the ship "Warler" passed over a shoal in Lat. 5° 4' N., and Lon. 24° 25' W. In the year 1796 a French authority reported a shoal in 4° N. 19° W. Not very far from the same locality the ship "Mary" reported having seen a reef on which the sea broke. I have grouped these three reports of obstructions to navigation, as, although diligently sought for on several occasions between the years 1815 and 1854, they remain undiscovered. There is nothing in the reports to induce us to believe that they were earthquake shocks; we are instructed that the lead was hove, and soundings obtained, which leads me to conceive that there was an upheaving followed by subsidence, as the soundings at present obtainable in this locality are very deep—2000 fathoms.

I may here mention, that nothing is more difficult to rediscover than isolated portions of rock, even in the vicinity of harbours and roadsteads; how much more so in the open ocean! In the year 1863 the ship "Lightning," one of the Black Ball Line of Australian packets, after clearing Port Philip Heads, but still in charge of the pilot, struck on a rock, but went clear; the ship, not making any water, proceeded on her voyage; the pilot took the bearings of the position, reported the circumstance in Melbourne; went out with some other pilots to discover the hidden danger to vessels passing in and out of Port Philip Heads; *the rock was not to be found*; and opinion varied as to whether the ship struck something moveable, that it was an earthquake, or altogether imaginary. In the mean time the "Lightning" arrived in England, went into dock, and in her bottom was sticking a piece of the rock which the pilots of Melbourne could not discover in the fairway approach to their own port. The rock has since been found, named after the "Lightning," and a buoy placed on it.

My friend, Captain Harris of the "Orient," has mentioned to me an instance somewhat similar:—In the vicinity of the much-frequented port of Dartmouth there is a point of land which, from time immemorial, vessels have been in the habit of rounding close to. Some years since a revenue cutter, in pursuing the same course, struck a rock; the crew had barely time to launch their boat and get clear, when the vessel went down. After a considerable time expended in sounding and diving, a pinnacle of rock was discovered, and removed by blasting. Alas! perhaps many missing vessels have been lost unconsciously, while fearlessly steering a course across the pathless deep, free according to their charts from all impediments to navigation.

Begging to be excused for this digression, I shall return to the volcanic region of the Atlantic. In Lat 3° N., and 22° W., a ship reported having experienced two shocks, with an interval of an hour between them. Not very far from the same position in the autumn of 1730 the "Cesar" sighted breakers. Again, in 1800, a ship reported that she grated over what seemed to be a bank of stones, there was a heavy swell running; and the report attributes the sensation to an earthquake.

I now come to the report of three vessels which actually received damage—the "Prince," the "Passadwick," and the "Sea Serpent." In December, 1853, Lat. 0° 54' N., Long. 26° 50' W., the "Prince" dragged over some obstruction. When she arrived home, her bottom showed proof of having been in contact with something rough, her copper being very much grazed. In 1859, Lat. 0° 35' N., Long. 28° 10' W., the "Sea Serpent" struck what was reported as a shoal, and was considerably damaged.

The Russian corvette, the "Passadwick," picked up the shoal twenty-four hours after the "Sea Serpent," but did not receive so much damage. The position given by these vessels is so constantly visited both by the outward and homeward bound crossing the Equator, that we might reasonably expect, if such dangers existed, they would be more frequently reported.

The fact of there being no breakers or discoloured water suggests an earthquake; then, again, how could a shock travelling through the sea damage a vessel's bottom?

I find a very full report given by Captain Geale, of the "Florence Nightingale," who, while prosecuting a voyage in the year 1859, experienced a severe shock of an earthquake, 48 miles North of the Equator, Long. 29° 16' W., St. Paul's Islands bearing N. W. by N., distance about ten miles. It commenced with a noise resembling distant thunder, and lasted about forty seconds; plates and glasses were fractured, and loose articles about the deck displaced; the ship felt as if grinding heavily on a reef of rocks; the watch below came tumbling up in great haste, the general impression being that the ship was on shore. Captain Geale states that he was much alarmed, ran to the side of the vessel; not seeing any symptoms of shoal water, he recollected that possibly it might be an earthquake; and, no further shock being experienced, the general alarm soon subsided. The sky was clear in the morning, but became overcast towards noon, the atmosphere sultry and oppressive, the sea short and irregular, followed by a heavy swell from the N. E.

In Lat. 1° S., Long. 19° W., the "Circassian" in 1840 saw a sand-bank under water, 32 miles South of the Equator, and nearly 18 West. The "Triton" found 23 fathoms; and another vessel in nearly the same position observed *black ashes*, and the sea in violent agitation, in 1835. Recent soundings bereabouts show the sea to be very deep—still we have the evidence of these three vessels which obtained soundings, and specimens of the bottom, stated to be a kind of black sand.

Three other vessels—the "Hutchinson," "Chrysolite," and "Crown"—furnish reports referring to the same latitude with a difference in longitude, probably due to their chronometers. The "Hutchinson" struck twice, but after a few moments went clear; no breakers or discoloured water. The "Chrysolite," drawing 16½ feet, struck the ground. The "Crown" grated for a short time. These latter reports are all of a comparatively recent date, being as late as the year 1835.

The following cases I shall briefly notice, without entering into details. Lat. 0° 57' N., Long. 41° 0' W., the "Blaesdale" grounded, and remained fast for ten minutes. Lat. 0° 40' S., Long. 20° 10' W., the "Philanthropy" scraped along a bank, and shook for three minutes; she spoke an American vessel which felt the same earthquake. Another vessel, 26 miles South of the Equator, Long. 19° 58' W., experienced violent shaking, loud rumbling noise; man at the helm could not hold it; described it as an awful earthquake, Feb. 1842. 22 miles South of the Equator, Long. 21° 6' W., the "Aquila;" loud rumbling noise under the ship's bottom; sensation like that of a vessel sliding over a rock; rudder so much agitated, the man who was steering could scarcely hold the wheel; no discoloured water, or the smallest ripple. Lat. 2° 43' N., and Long. 20° 35' W., the "Krusenstern" reported a Volcano in May 1806; the ship trembled, as if striking upon rocks; would not answer her helm; a cloud of smoke arose about the height of the ship's mast, disappeared suddenly, then rose again and vanished altogether; appeared to be distant about ten or fifteen miles; it could not be a waterspout, or a ship on fire, the smoke rose so high. Doctor Horner was of opinion that, if the whole were not ocular deception, occasioned by refraction of the rays of light, it must have been a volcanic eruption. As this vessel were employed in an exploring expedition, it is to be regretted that they lost the opportunity of verifying an important physical phenomenon, the excuse made being the approach of night, which prevented them examining it sufficiently close. I think the foregoing affords us ample evidence that there exists one or more centres of submarine volcanic action within the area I have indicated.

I may now mention my personal experience. I sailed on the 9th November last from Adelaide in the ship "Orient," bound to London. The "Orient" is 1000 tons register; her draught of water on the occasion 17 feet. Subsequent to leaving port we encountered strong N. W. gales for four days; on the 16th the weather was damp and overcast, the sun breaking out at intervals; the barometer stood at 29.10; similar weather prevailed during the night. At twenty minutes past seven o'clock on the morning of the 17th I was startled by the most unusual and extraordinary sensation I ever experienced, nor have I ever met anything at all similar

in my seven years' voyaging round Cape Horn, or my thirteen years of almost continuous maritime experience. The first sensation was the ship trembling all over, and as if on the point of breaking up; then she felt as if grating over a ledge of rocks. I hurried on deck, where general dismay was depicted on the faces of those present. Capt. Harris remarked, that he thought the "Orient" was going down under us. Just as I reached the deck she had passed over the danger, and her stern seemed to be drawn down just as the grating sensation ceased. On ascertaining that the ship did not make any water, confidence was restored, and speculation became rife as to the nature of our adventure: some thought we had passed over a submerged iceberg; others differed in opinion as to its being a newly discovered shoal, with fortunately just sufficient water to carry our ship over, or that it was a submarine volcano; this latter was the opinion of Capt. Harris and some other scientific persons on board. The deep sea lead was put over the side as soon as it could be obtained, some two or three minutes after the occurrence; no bottom was found at 50 fathoms. The water was not discoloured, nor was there any unusual agitation; the barometer stood at 28.80, there was no change in the weather before or after to account for the fall of three-tenths, the difference in the reading of the 16th and 17th; the barometer continued to rise every day up to the 27th, when it stood at 30.00. The thermometer on the morning of the 17th indicated a temperature of 46, the water 48, the wind N. N. E., moderate. The position of the occurrence, as accurately as we could obtain it, was Lat. 51° 44' S., Long. 170° 49' E. The Auckland Islands bore about N. E. 210 miles. I may add that the ship's bells rang fore and aft; glasses were displaced from the rack in the saloon; the ship's compasses were not affected; the rudder moved freely; there was no difficulty experienced in steering, nor did the man at the wheel notice anything peculiar, except the drawing down of the ship's stern.

Taking advantage of my being in London a few days since, I visited the "Orient" for the purpose of ascertaining if she exhibited any trace on her copper of being in contact with anything, the impression being still very strong on my mind that she had grated over a shoal. The ship had just come out of dry dock, where she had been carefully examined, but not the slightest trace or evidence of her being in contact with the ground could be discovered. We must, therefore, come to the conclusion that the occurrence I have narrated was occasioned by a volcanic shock. Still it does appear to me most difficult to understand how any vibration or earthquake shock passing through water so deep could produce a sensation so exactly similar to that of going over a solid obstruction. I may here point out on the chart and diagram before you, some of the reported shoals and earthquake shocks I have just referred to. Having drawn your attention to the evidences we have of submarine volcanic action, I may remind you that we have many islands in the southern seas at a considerable distance apart from each other, the majority of which, although exhibiting no evidence of active volcanic agency at present, are yet records of what once took place in this vast ocean.

The Island of Annabon, in the Bite of Biafra, is one of four volcanic islands—the other three being St. Thomas, Prince, and Fernandi Po. The truncated pyramidal peak Dofogo, in the island of Annabon, has an elevation of 3,250 feet. These islands lie in a line of direction S. S. W. and N. N. E. with the volcano of Leba, 13,000 feet high, in the Cameroon range of African mountains.

Fernando di Noronha, 800 feet with its group of small islets, is distinctly volcanic; there is no crater in this island. Ascension, 2,867 feet, has basaltic lavas; masses of scoria have been thrown out from the Green Mountain, where also are to be found angular fragments of granite. On the Western aspect is a large open crater; numerous volcanic bombs, twelve inches in diameter, lie scattered about.

St. Helena, 2,692 feet, is entirely volcanic; near the shore the rocks are basaltic, traversed by dykes. In the interior are beds of lava. Between Diana's Peak and Nest Lodge are the remains of a great crater; here scoria and cellular lava abound. Trinidad, 2,020 feet, is a mass of volcanic rock, rising abruptly from the sea. The interior is chiefly composed of greenstone; the Sugar Loaf Hill, and the Nine-pin Rock of Trap. The Nine-pin Rock is 850 feet high, in the form of an exquisitely proportioned column. The small islands of Mantinvas, in the vicinity, are also volcanic. Tristan d'Acunha 8,300 feet, as also Nightingale and the other islands adjacent, are volcanic.

Thompson and Bouvet Islands, Lat. 54° S., are masses of volcanic rock, traversed by veins of lava, presenting vitrified appearance: black, white, blue and green, sparkling in the sunshine of this icy

* By Dr. J. M. Barry. Read before the Royal Dublin Society, April 16, 1866.

region, present unmistakeable signs of the origin of these islands. Bridgman Island, one of the South Shetland group, still sends forth hot vapours amid its beds of ice. In the island of Deception, in 1842, flames were seen to issue from thirteen distinct points. In all this group obsidian, black ashes, and pumice abound.

The islands discovered, or rather rediscovered by Captain O'Donnell, of the "James Baines," in Lat. 53° S., are probably, judging from the description given by him, volcanic, and possibly of a more recent date than other portions of isolated land in the South Atlantic.

Some years since I sighted the Crozettes, or Desert Islands: from the peaked appearance of the land, it was at first mistaken for an iceberg. The shape and general aspect of these islands reasonably leads us to believe that they are of similar origin.

However, there can be no doubt about New Zealand and the Aucklands. The capital of New Zealand is, in fact, founded on an extinct volcano. Earthquake shocks are not unfrequent in Wellington Straits. The sea level has undergone considerable change at Taranakce; the water flows over what a few years since was dry land, and rollers come in on the coast at intervals, which is attributed to submarine volcanic eruptions. Indeed, from what I have heard of these islands, I assume that they are situated in one of the volcanic centres of the South Pacific Ocean. Possibly the "Orient" passed over another.

Diego Ramarezes Islands, and, indeed, all the islands forming the Cape Horn group, are volcanic, while the Falklands and South Georgia exhibit no evidence of volcanic origin. Much of the land discovered within the Antarctic Circle is described as volcanic; and most of us remember Sir James Ross's graphic description of the eruption of Mount Erebus within the stupendous icy barrier of the Antarctic Zone. North of the Equator, and within the area that I have already dwelt on, St. Paul's Islands remain a record of some past submarine convulsion.

In the vicinity of St. Michael's, one of the Western Islands, at the commencement of the present century, an island was thrown up in one night, without any remarkable circumstances to attract the attention of the inhabitants of Villa Franca, who were astonished when they awoke in the morning to find an island where the day before was deep water. A fisherman went to reside on it; but the island went down one night, taking the fisherman and family with it, leaving a dangerous reef which still obstructs the entrance to the harbour of Villa Franca. I may remark that St. Michael's still possesses an active volcano.

I need scarcely mention the volcanic action going on in the Mediterranean at present. The beautiful engraving in the *Illustrated London News* of the submarine volcano and Island of Santorin, has probably been seen by most persons present; but a few general remarks on earthquakes may not be deemed an inappropriate conclusion to this paper. The destruction of life and property occasioned by them, and the mysteriousness of their cause, have at all times forced them on the attention of mankind. It is estimated that upwards of a dozen earthquakes, destructive of life and property, occur upon the surface of the globe every year. Fertile districts have been laid waste, and enormous numbers of human beings destroyed; sixty thousand perished in the great Lisbon earthquake; by an earthquake in Calabria forty thousand were destroyed; and it is estimated that as many as thirteen millions of the human race have thus perished. No portion of the earth's surface is free from earthquakes. Egypt has been more exempt than any other country; but there is a record of one which took place in the year 1740.

The cause of earthquakes is very obscure, and many theories have been brought forward to account for them. All agree as to their connexion with volcanoes, and that they are produced by the same subterranean agency. Sir Humphrey Davy, when he discovered the metallic basis, suggested the idea that those metals might abound in an unoxidized state beneath the crust of the earth; and that when water came in contact with them gaseous matter would be set free, sufficient to produce the earthquake; the metals would combine with the oxygen of the water, and the heat evolved melt the surrounding rocks.

Mr. Mallet looks on an earthquake as the transit of a wave of elastic compression, in any direction, vertical or horizontal, through the crust of the earth, from a centre of impulse, attended by tidal and sound waves, influenced by the circumstances of position as to sea and land. He assumes that the centre of disturbance must be always near a large supply of water. He conceives that, when an eruption takes place at the bottom of the sea, large fissures are opened, through which the water

is poured on to a heated surface, and assumes the spheroidal state. No impulse at this time will travel far, except the trembling which precedes the shock. When the water comes in contact with a cooler surface, then a vast column of steam is evolved into the deep and cold water of the sea. The power thus set free at the volcanic focus is transferred in all directions, and constitutes the true earthquake shock. It travels with immense velocity from the centre of impulse; the rate of translation being as much as thirty miles an hour, its amplitude several miles. During the passage of the main undulation, a continuous tremor, with a short quick action, like a chopping sea, is often felt; this arises from secondary waves, like the small curling swell often seen on the surface of the ocean. When the roll reaches the sea, it lifts the water, and carries it in an elongated heap far out into the deep. The shock of the Lisbon Earthquake was felt in Finland, Canada, and some of the West Indian Islands—an area of 7,500,000 square miles. Supposing that but twenty miles of the earth's crust were removed, then 150,000,000 cubic miles of solid matter were displaced. The returning wave at Cadiz was sixty feet high; the power evoked must have been truly fearful.

Recently a missionary vessel was swept along by the force of one of these volcanic rollers, until she came in contact with a reef, over which she was fairly carried, and wrecked to leeward among coral rocks. Some years since a number of these rollers, on a fine calm day, poured into the anchorage at St. Helena, tearing the vessels from their moorings, and casting them on shore without the slightest warning. In deep water these waves may be so long as to pass under a ship without being observed; but on a sloping shore the depth of water becomes less than the altitude of the waves, and breaks on the shore with great force, in some instances extending far inland.

The least destructive form of earthquake is the undulatory. If the motion is perpendicular, the devastation occasioned is frightful; either radiating from a centre, or extending over a considerable line, according to the nature of the original impulse. Sometimes only a few shocks occur, but of sufficient force to spread desolation over hundreds of miles; in other cases as many as 200 have been experienced in twenty-four hours.

Humboldt remarks that, if we were aware of the daily condition of the earth's surface, we should probably ascertain that the earth is always undergoing shocks at some points of its surface. Some very important permanent results remain after great earthquakes; elevations and subsidence are the consequences of those throes.

The power of the great sea wave already alluded to was very remarkable in the Jamaica earthquake of 1692. We read that the "Swan" Frigate, which was lying at the wharf at Port Royal, was borne by it over the tops of houses, and that many persons escaped by clinging to her. Vessels in the vicinity of the island felt the shock of this earthquake severely. On board of one ship, 100 miles from the coast, the men on deck were violently thrown upwards to the height of a foot and a half.

On the coast of Chili and Peru rollers attributed to submarine volcanic action occasion vessels to drive from their anchors, and sometimes cause their destruction.

ON THE TRUE NATURE OF THE DECAY OF STONE IN LONDON, AND MODES OF PREVENTION.

(Continued from page 184.)

HAVING thus cleared the way to affirming that there is something yet remaining to be said on the no doubt somewhat old subject of the decay of stone in great cities, we return to our proposition at the outset, that in this respect a volcano and London are nearer akin to each other than is commonly imagined.

The gaseous emanations from all volcanic vents consist mainly of steam, hydrochloric acid held in aqueous vapour, sulphurous acid, and sulphuretted hydrogen, or sulphide of hydrogen, as it is now the fashion to call it. There are many other substances evolved or produced as primary or secondary occasional products, but with these we need not now meddle.

The observable temperature at any volcanic vent at a given moment depends upon the balance that may exist at the time, deep beneath, between the supply of heat and the supply of water (from the surface or sea) to its foci, this being, by the evolution of steam, the great cooling agent. Where the supply of heat (we are now concerned with its cause) is large, and that of the cooling agent relatively at the time small, liquid lava, ignited stones, &c., and other phenomena of a very high temperature deep below, are evidenced at the superficial vent or crater. But where either the supply of heat has fallen very much off, or has been overpowered by the infiltration of water, and

robbed away in the latent heat evolved in volumes of steam, often poured forth for ages, then the temperature at the surface may not reach even the lowest incandescence, nor yet the boiling point of water, and still vapours may continue to be evolved from innumerable little mouths and fissures for unknown periods. These last phenomena here seen constitute the *solfatare* and *fumaroli* of the Italians.

There are numbers of our countrymen now-a-days who have seen the one at Naples, not far from Pozzuoli, a few miles from that city, called *par excellence*, the *solfatara*; and others may have seen those in Tuscany, which evolve with other products, boracic acid held in suspension in the high pressure and superheated steam of the fissures, and which have for a long time constituted an important source of our borax of commerce. But he that would study in Europe the chemistry and physics of *solfatara* action upon a scale of grand development, must go to the Lipari islands, off the northern coast of Sicily. At the south-west side of the largest of these most interesting volcanic islands, Lipari itself, at a place called *Bagno Secco* and *Il Stufi*, where once was one of the great active craters of the island, all the reactions that are produced by the effects of the evolved vapours of an immense region of *solfatara* upon the rocks and minerals constituting it, may be studied with the highest advantage. Here the temperature of the evolving steam is nowhere much above the common boiling point; but in the next adjacent island of Vulcano, in the bottom, and steep sides of 1,600 feet in sheer height, of the interior of one of the high *partially* extinct (*quoad* incandescence) craters, the action of the same vapours (as well as of others not connected with our present subject) may be studied, where the temperature of evolution, at a greater *Bocca*, is high enough to melt brass, and varies from that down to 212° Fahr. The temperature of the great *Bocca* was measured there in 1864 by Mr. R. Mallet, having been approximately measured previously by M. Chas. Saint Clair Deville. At both these grand regions of *solfatara* the power with which aqueous vapour and the volatile compounds of sulphur together, can act upon the hardest and most compact stones, and the intimate nature of these actions, can be studied with all the advantages of having the phenomena developed upon the grandest scale, and with the greatest intensity of action. In Lipari, at *Il Bagno Secco*, the rocks and soil are all volcanic, and vary from the hardest and most refractory *trachytes* to incoherent *tufa* and beds of *lapilli*, which contain a considerable proportion of calcareous matter. At Vulcano, in the great crater, the rocks of course are also volcanic, but many of the piled up beds of baked and hardened lava, that were long exposed to the hardened heat of this grand vent when it was intensely hot and active, have been converted into opites and jaspers as hard and dense as flint. Yet at the high temperature at which the superheated steam and sulphurous vapours are here given off, the very hardest and most intractable of these rocks all go down before their chemically solvent action, and end by becoming either dry and heated dust, or clay and mud, where the steam condenses or the rain lodges. The same takes place with the same final results, though usually more slowly, with respect to the rocks and soil at Lipari.

One may see a great angular block of stone lying before you, white, and looking like flinty chert, perhaps with red and purplish streaks here and there, near one of the innumerable small fissures that penetrate the soil in all directions: It looks hard and rigid; you strike it with a hammer and large lumps fall off; you break farther in, and after a while you get to solid unaltered trachyte, or jaspery rock. If the weather be wet the outside of the rock is falling to pieces as slippery mud. You look at its texture when dry, narrowly, and you find the altered rock is but the form, the *eidolon*, of the original, and that in substance it is nothing but impalpable clay and silex, in which are imbedded more or less numerous crystals of *gypsum* (sulphate of lime). These are sometimes found developed into single crystals of four or five inches long, and an inch or two in thickness, and cracks spread from these while dry, showing that as they enlarge they are splitting up the mass in which they lie imbedded, and gradually disintegrating themselves by reducing their cradle to powder.

Did space permit, or was it sufficiently german to our subject, it would be full of interest to follow and trace the subsequent changes that take place, not only on the disintegrated powder or mud that once was lava, and which before that had been Apennine limestone, and granite or other silicated rocks melted together, but on those selenite crystals themselves, as they are slowly dissolved by air and rain and steam, and running dissolved in the channels of surface drainage, or soaking into deep beds of prous strata, effect new combinations, and form new rocks. But we must pass this, and far more besides, to say, that what here goes on upon a gigantic scale, and with giant strides in rate of progress, is, *pro tanto*, the same that is going on in every great city, and especially in every great coal-burning city, upon the materials of

its structures and buildings. Aerated water in rain, carbonic acid, free in the atmosphere or also held in the water—steam, or aqueous vapour, sulphuretted hydrogen, sulphurous acid, and a whole tribe of sulphur and oxygen compounds, up to sulphuric acid, are being constantly evolved or produced alike in the solfatara, and in the city. The difference is simply one of quantity, and the rate and intensity of chemical action differs only because the active agents are evolved in less proportion in the city, and act upon the stones, &c., not at a high temperature, but at that of the atmosphere generally in our climates. In the volcano or solfatara a very large proportion of the sulphur, nearly the whole, is at first evolved as sulphuretted hydrogen, though much of that is changed, long before even it reaches near the surface by conversion into sulphurous acid. We cannot here go into the volcano-chemistry of this, but merely state the fact.

It was the brilliant discovery of Dumas that sulphurous acid and sulphuretted hydrogen in presence of aqueous vapour mutually decompose each other, and sulphur itself is deposited; the reaction of two volumes sulphuretted hydrogen, and one volume of sulphurous acid being thus



The last compound, pentathionic acid, being itself highly unstable, rapidly becomes further oxidized, and again deposits sulphur. Finally much sulphurous acid in presence of aqueous vapour gets oxidized up to the point of actual vitriol (sulphuric acid). All these reactions go on much more intensely when exalted by the effects of contact with porous bodies, whether stone, clay, ashes, sand, tufa, or the like. In this way the vast deposits of sulphur which are wrought for commerce in various parts of the world have been produced. At Vulcano, and many other places, the sulphur seams may be found in the act of forming; at Girgenti, in the south of Sicily, where all appearance of even solfatara action has long ceased, the sulphur is mined for and extracted from the seams in the dry clay beds in which it is found, and where it and these beds of clay, were alike the result of solfatara action upon a gigantic scale in remote ages.

Where does the sulphur evolved by volcanoes come from, it may be asked? We can only briefly answer, from sulphates and sulphur compounds, such as pyrites, intercalated or disseminated in the rocks situated deep beneath at the focus of volcanic heat, and between that and the surface (wherein much of these, as in the Apennine limestones, &c., was the result of the decay of animals whose remains or casts attest their former existence in it), and also from the sulphate of lime brought to the volcanic focus by the infiltration of sea water.

Well, where does it come from in the city? First and chiefly from the decay of animal and vegetable matter containing it; next, from the destruction of the coal consumed in fires or distilled for gas, the latter containing some of the total sulphur of the coal itself, the rest being in the gas-works' refuse sent into the sewers and rivers; thirdly, from the decomposition of sulphur compounds, chiefly sulphate of lime, contained in more or less quantity in nearly every drop of water, fresh or salt, that we use or come in contact with.

In the solfatara we have hydrochloric acid and aqueous vapour flying off—potent agents of rock disintegration. In the city this only accidentally occurs, but nitric acid is constantly present in putrescent waters, and even in rain and aqueous vapour. Carbonic acid, which in solution in water or in presence of aqueous vapour, is one of the most potent solvents, and plays the most wonderful parts in the sublime economy of this globe of ours, is common to both.

And now, to narrow our view to the action of the civic atmosphere on building stones as it actually takes place: two or three things are pretty obvious, though we are not aware that these have ever been distinctly stated; they certainly are not so in the report of the chemists above quoted from, nor are they to be gathered from the report of the committee itself, nor yet from any of the evidence given before it, as printed in 1861:—

First. Sulphuretted hydrogen and sulphurous acid, with aqueous vapour and air, *i. e.*, in presence of our ordinary moist atmosphere, are the great chemical agents of decomposition of the stones of our civic buildings. All the other agents of destruction, such as air, water, and carbonic acid; nitric acid, air, and water; nitrates of ammonia, or of the fixed bases, soda, lime, magnesia, &c., resulting from prior actions—all play but subordinate parts as chemical agents.

Secondly. The more readily the stone employed is actable upon by sulphur acids, the more readily must it decompose. Chemically, therefore, the more calcareous and magnesian the stone, the more rapidly it will be destroyed; and mechanically, the more readily it gives admission to the vaporous or gaseous

sulphur acids and water vapour, the faster it will be disintegrated.

Thirdly. The destruction produced is always due to combined chemical and mechanical agency. The chemical elements or particles of the stone are eaten out, and new compounds of sulphur acids formed of them. These are chiefly sulphates, and mainly of the bases of lime and of magnesia, with a little soda and potash occasionally. But these sulphates form crystals, *hydrated crystals*—*i. e.*, crystals with constituent water within the porous mass of the stone—and as these *enlarge* (not *expand*, as Mr. Burnell expresses it in his evidence, by a curiously confused use of words, if not of thought—Rep. 1506-7) in volume, they split off shell after shell of the stone. If the stone be limestone oolite, such as Portland for example, sulphate of lime in gypsum crystals is formed in its substance. These may be actually *seen* without trouble, upon examining with a lens or low-power microscope some of the scaly exfoliations from churches at Birmingham, Oxford, and Bath. If the stone be dolomite, as at the Houses of Parliament, then crystals of sulphate of magnesia and of sulphate of lime both form, but those of the former base seem to form in greater abundance, which is not so easily explained, but probably will not be found constant with all sorts and forms of dolomite.

Fourthly. From what precedes it is plain that the penetrability of a stone by fluid water is not in any degree necessary to its decomposability; on the contrary, every stone, the constituents of which can be chemically acted on by sulphur acids, must be so acted on, *provided its substance be permeable by air, gases, and aqueous vapour*.

Fifthly. What is even more: the closer the texture of the stone, *i. e.*, the smaller and finer its pores are, the more rapidly and intensely it will be acted upon, and (*ceteris paribus*) the faster it will be decomposed chemically, though it may perhaps disintegrate less rapidly by the growth of internal crystals afterwards. Thus no mere closeness of texture in building stone, nor the fact of its particles being in structure crystalline, can prevent decomposition, *unless the stone be of such a character as to be impermeable to gases and vapours*. And this is just the reason why marbles, the really compact crystalline limestones, are not decomposed in the way we have been treating of, because they are absolutely impermeable to gases. Such limestones are only eroded on the surface by air, water, and carbonic acid.

In Ireland ecclesiastic ruins can be pointed to, which after 700 years' exposure, even in cities, show the original chisel marks on the beautiful gray Irish limestone still as keen and fresh as the day they were cut, all the little erosion that has taken place as above having been parallel to the original surface. And had this gray limestone been employed for the Houses of Parliament, as proposed we believe at the time by Lord Montague, then Mr. Spring Rice, who knew the stone well in his own country and on his own Munster property, there would have been no commission on the decay of the stone ever needed.

It may be necessary just to remark, that the reason why we say the closer the texture of a porous stone the more rapidly, *ceteris paribus*, it will be decomposed, if decomposed at all, is this—that all chemical action is exalted by the force of capillarity and of surface of contact of porous bodies, and this exaltation is greater as the pores are smaller, because thus the surfaces of contact are in proportion greatly increased. For example, a cubic inch of marble has six faces of surface, each of an inch square, or six square inches in all of surface for chemical action; but suppose we cut it up into little cubes each of 1-1000th of an inch on the side, we shall have from it one thousand million such cubes, and their total surfaces now will be equal to one thousand times that of the original cube, or to no less than 416 square feet. We shall therefore on the score of surface alone have the action a thousand times as fast. But porous bodies do far more than merely increase surface. Thus, hydrogen is inflamed when a jet of it is thrown upon spongy platinum, because there is good ground for believing that the oxygen of the air in the minute pores of the metal exists in actually the liquid state, and hence these elements exert their chemical affinities with all the exaltation due to so great a concentration in volume and of force. This must serve for an illustration.

The views which we have here in too brief and unsystematic a way endeavoured to put forward will be found, if rightly applied, to solve all the difficulties, perplexities, and apparent contradictions noticed by the committee on the Houses of Parliament, as to the circumstances under which observation proved these stones to have most and least decomposed. These circumstances were so apparently irresolvable that the committee declare that they can find no law or principle governing them. (Report, *passim*, and particularly paragraphs 5, 6, 7, and 8, &c.)

Assuming the stone the same absolutely in texture and composition, it will decompose fastest, where it is longest damp, but not saturated with water; is most

freely exposed to air; where the air is most loaded with the decomposing agents and with aqueous vapour as near the ground perhaps; and mechanically where the stone is most exposed to frost in winter. And as regards the texture of the stone itself, it is not that which will absorb or pass as a filter liquid water the most freely, and that will, *ceteris paribus*, decompose the fastest, but that which will most greedily absorb gases and vapours, and hold in its pores the greatest volume of these.

Now if these views be true, and we believe they are not only new (in reference to this subject) but true, then it follows that of the various processes which were brought before the committee (leaving out of view Mr. Szerelmey's nostrum), viz.:—

1. Application of alkaline soluble silicates to the stone.

2. Application of these and then of other solutions to effect double decomposition and deposit of insoluble compounds in the stone.

3. Application of hydrofluoric or hydrofluo-silicic soluble compounds to the stone.

4. Application of phosphoric acid, or of phosphates in solution, to form insoluble lime compounds (*apatite*) in the stone.

5. Application of solutions of bicarbonates of the alkalis or alkaline earths to produce insoluble carbonates in the pores of the stone.

None can be effectual, but in so far as they close up the pores of the stone to the full extent of rendering it impermeable to air, gases, and vapours; nothing short of this can do more than retard but not stop chemical action. A superficial thin indurated film, as by Kuhlman's soluble glass process, is not likely to do this; nor, we believe, will any one of the several processes above have an ultimate effect one bit better than simply brushing over the face of the stonework two or three times with oil, thin boiled linseed oil being probably the best. This was actually done to the Portland stone colossal statue of Nelson, on Nelson's Column in Sackville-street, Dublin, by the late Mr. Francis Johnston, architect, upon the advice of the writer's own father, and the surface of the statue, after more than fifty years' exposure in a very damp climate, is scarcely at all eroded or acted upon.

The fourth process, that recommended by Mr. Spiller, is based upon an error; it neglects altogether to regard the fact discovered by Boussingault, that water holding carbonic acid, dissolves the phosphates of lime almost as readily as water does sugar. Mr. Ransome's artificial stone, if a pure sandstone merely cemented together by soluble silica, provided its substance be impervious to water that can freeze in it, will no doubt endure for ages in our London atmosphere. So will some of the serpentines and many of the perfectly compact and impermeable marbles or argillaceous stratified stones. The granites will last a long time, but even they are not *es aet*, as any one may see who looks carefully at the surface of that of Waterloo Bridge, especially on the cutwater caps, between wind and water. The re-actions on granite, however, are totally different from those on calcareous, or calcareo-magnesian, or calcareo-aluminous porous stones, and are due more to carbonic acid and water, to nitrates in the rain and river, and to frost than to anything else.

The true building materials for London are, brick tiles, and terra cotta. Let any one go see the grand Roman amphitheatre at Pozzuoli, north of Naples, situated within a mile or two of the solfatara itself, close to a town that was a well-inhabited place in the days of Paul the Apostle, and where the whole country evolves more or less sulphureous compounds, and he will see the most magnificent bricks and brickwork, no better ever executed, and now, after nearly two thousand years, as sound, fresh, clear-coloured, and smooth-faced, as the day when the red square tile bricks were laid by Roman bands.

Building stones also of the most delicate and beautiful tints, of a texture sufficiently hard and wearing, and yet easily wrought and capable of taking the finest work of the sculptor's chisel, and in blocks of almost any size, could be obtained from the Silurian beds of the extreme north-west of Ireland. These the writer has himself tried to a small extent, and has no doubt they would stand the London atmosphere perfectly, and that if once established a great trade might be opened in this fine stone with and in London.

There are some extremely good and judicious remarks on our brick-building in London made by Mr. I. D. Mathews, in his paper from which we have already ventured to extract a passage. The Prussians are our masters at present both in brickmaking and in tasteful and skilful bricklaying, and we should do well to take a lesson from them, especially from the cities of the great German plain.

As to the Caen stone which is now running riot in our London buildings, probably fifty years will reduce it, with all the fine carving being lavished on London frontages, to the state of a wax model that has been held before a kitchen fire, and been well begrimed with soot besides.

KILKENNY AND SOUTH EAST OF IRELAND
ARCHÆOLOGICAL SOCIETY.

This Society met on the 11th ult. at their rooms, William-street, Kilkenny; G. Robertson, Esq., in the chair.

The following were elected as members:—William Stuart French, Esq., J.P.; Very Rev. Dr. Kavanagh, President of Carlow College; Rev. Patrick Parker, R.C.C.; Mr. Joseph Dunne; Miss Ryan.

The Rev. James Graves said the Society had received a notification from the family of Sir John Macdonald, K.C.B., of the death of that gallant and distinguished officer, who was the first "life member" of the Kilkenny Archæological Society. Sir John being then commanding the Kilkenny Military District, had joined the Society at its first formation, had frequently filled the chair at its earlier meetings, and evinced a deep interest in its progress and prosperity. It was with deep regret they had now received the intimation of his decease.

PRESENTATIONS.

The Secretary laid before the meeting several publications presented to the Museum; amongst them were, "Observations on an Unpublished Essay on Ireland by Sir W. Petty (A.D. 1687), by W. H. Hardinge, Esq.," being a paper read before the Royal Irish Academy, and presented by the author.

The Chairman, on the part of Mr. H. Bruce Armstrong, Burnchurch, presented a remarkably fine bronze spearhead, and a flint arrow-head in excellent preservation.

Mr. H. Fitzsimons presented a piece of bog butter, to which some bark was adhering, found in the turf bog near Abbeyleix. It seemed as if a large roll of butter had been rapped up in the bark of a tree, and then placed in the bog.

Mr. Graves mentioned, in reply to questions from some members present, that it would appear from the Irish Hudibras, and other publications of the seventeenth century, that the Irish people deposited butter thus in bogs for the sake of the strong flavour which was thereby imparted to it. These deposits sometimes were forgotten to be removed again, and hence the frequent discoveries of "bog butter."

Mr. Maurice J. Kelly presented a shilling of the reign of Charles I.

Mr. John Dunne presented a "gun-money" half-crown of James II.

Mr. Rowe, presented a photograph of Kellistown Church, county Carlow, a locality famed of old as the site of two great battles—one fought before the English Invasion, the other in 1397, when Roger Mortimer, Lord Lieutenant of Ireland, was killed by O'Nolan, O'Byrne, and others of the "Captains of M'Murragh," as described by Thady Dowling, in his Annals of Ireland. Kells, in the county of Kilkenny, had long been supposed to be the scene of this remarkable battle, but the late Dean Butler, of Trim, in editing Dowling's Annals, has fully established that Kellistown was the place where

"Roger Mortimer, at Kells,
Fell in the fiery fray."

Mr. Robertson reported that he had been enabled to dispose of the Saxon penny of King Offa—found by a poor man, and sent, through him, by the Rev. V. R. Drapes, for exhibition at the last meeting—to great advantage for the owner, as a London collector had given two and-a-half guineas for it. He wished now to correct a statement which he made at last meeting, as to the coin having been found in the Queen's County. It appeared it had been found near Johnstown, in the county of Kilkenny. The finder, who would gladly have taken a shilling for it, was overjoyed at his good fortune in obtaining so large a sum. It would serve, he hoped as a hint to poor people turning up old coins in digging in the fields, not to dispose of them to itinerant dealers for the intrinsic value of the silver, without submitting them to persons competent to decide as to their value.

INSCRIBED BOUNDARY STONE.

The Rev. James Graves informed the meeting that Mr. Prim and he had recently made an interesting discovery, having lighted on an inscribed boundary stone, of some antiquity—a class of monuments which he believed to be very rare in this country. In a low wall, separating Colonel Mollan's demesne at Newtown, from the farm of Mr. William Hutchinson, at Killeney, near Kells, was a large stone facing in the direction of the latter, on which was an inscription in two lines, in old English characters, but cut so lightly on the undressed face of what appeared to have been a rough boulder, before being applied by some country mason to the purposes of an ordinary building stone, as to be most difficult of decipherment. He had gone with Mr. Prim to see it last year, and they were informed by Mr. Hutchinson that many people had previously attempted to read it, but without success. All that was known about it in the locality was that it was esteemed from remote time to be the stone which marked the

boundary between the townlands of Newtown and Killeney, and also between the estates of two proprietors. But whether the letters on the stone indicated so much, or what their purport might, be no one could tell. On this, the first day of their visit, all they could make out was the single word, "Kelles," which, however, was very distinct to eyes practised in the reading of inscriptions of the kind. The word was turned the wrong way, so the presumption then was that the stone had been reversed by the mason who had inserted it in the wall, and that the two lines should be read "upside down." The day was not very favourable for reading an inscription of the kind, and they determined to pay another visit when the sun might be expected to shine fully on the stone. Since the last meeting of the Society, they had paid a second visit, and the sun being favourable, they had succeeded in their object. The first discovery made was that only the upper line of the inscription was reversed, the lower one reading quite properly "Barron of Erly." The reversed line, on due examination, was found to contain the words "Prediu' of Kelles." The contraction after the last letter of the first word of the upper line denoted that the letter "m" should be supplied so as to form the word *predium*, the Latin for "farm."

Newtown was in the beginning of the sixteenth century—the period to which the form of the letters would indicate the inscription to belong—the property of the family of Sweetman, of Newton and Castle-Eve, the head of which bore the title of Baron de Erly—as a Baron of the County Palatine only, not a parliamentary peer. At the same time Killeney was a grange or farm belonging to Kells Priory, and doubtless the monks of that establishment being in the habit of using Latin in conversation amongst themselves were accustomed to term it their "*predium*." The stone evidently had originally been a boulder, the face of which appeared above the surface of the ground. As it was placed naturally on the mearing line between the Abbey property and that of Baron Sweetman, it was considered a convent boundary mark; and in order to leave no mistake on the subject, the inscriptions were placed, each facing the property which it described. In more modern times, when a boundary fence was being built, the landmark was taken out of the ground, and included in the wall, but, through ignorance on the part of those engaged in the operation, it was thus awkwardly disposed, so that one line was reversed. If it had been placed on the top course of the wall, with the inscribed surface upwards, it would still indicate exactly what had been intended by the person who traced the letters upon it three centuries since.

HOW CROMLECH STONES WERE LIFTED.

Mr. Clibborn, curator of the museum of the Royal Irish Academy, forwarded the following communication to Mr. Graves:—

"As many people are curious to know how the ancients moved the great covering stones, and afterwards lifted them on their supporting stones, which, together, constituted our cromlechs, it has occurred to me to mention to you, for the good of all parties interested on such matters, how the modern Chinese people, without the aid of engineers, move and place great stones, or weights of any kind, as this process was explained to me a few days since by Colonel Houghton, who, I believe, has had several opportunities of seeing work of this kind performed with perfect success.

"No doubt the ancients who constructed the cromlechs and placed the large pillar-stones in this country, wanted those great modern cranes, by which we are enabled, by a great loss of time, to economize the power or force of men; and failing in the appliances we have, they economize time, as it were, while they used the force of many men, bringing into effective operation their strength or their might, the number being able collectively to lift the stone to be moved or raised.

"The difficulty in an operation of this kind arises from the impossibility of our getting more than a half-dozen men to lift a stone at the same moment, without the aid of poles, of which we have equivalents in the handles of the common hand-barrow, and also in the poles of the sedan chair. In the latter, two carriers work simultaneously, and they have the weight to be lifted divided between them; but if they placed cross sticks under the ends of the handles, so that two men might be employed holding the ends of these cross sticks, their middles supporting the pair of original poles, thus the weight would be divided equally between the four men. And again, if united of the four men, and the two supplemental sticks, other cross sticks, or bars, were placed under the second bars, and their ends held up by eight, the load would be divided between them all, and so on, by our using more cross sticks, and doubling the number of beams, we might greatly diminish the load each would have to lift; or by keeping up the same strain which the first pair of men had to bear, one might increase the original load proportionably.

"And again, as to the principle of the cross stick, or pole, with one man supporting each end of it, the load to be lifted being in the middle of the stick, it follows that whenever the spaces permit within the limits of a system of poles cross sticks may be introduced, a man at the end of each of them, and their middle supporting the frame here and there and everywhere, so that in this way the lifting or carrying force of hundreds of men can be made effective in lifting and moving great weights.

"The moving of the big stones into the original pair of poles, or system of poles, could be effected in the same way as poles are in the marble quarries at Carrara, where the handspike or lever is used with the most perfect ease and success, the number of men employed to move the long end of a lever, or handspike, being increased at pleasure, and all made available by means of hand-ropes. This method, also adopted in the East, was rendered available by the people of Boutan, as explained by the same gentleman to me, in a sort of catapult, by which they managed in the late war to throw very large stones on her Majesty's troops, to their great annoyance.

"Thus we see that the antiquary may yet find in use amongst half civilized and barbarous peoples' plans and contrivances which may help him to account for things at home to which our mechanical appliances could not have been applied, though the weights moved and lifted, being so great, one is led to infer that the ancients had machinery, or modes of uniting mechanical force which we are ignorant of, or perhaps, that the force which individuals were able to exert, was vastly greater than we possess. On the contrary, it seems that we are stronger, larger, and heavier than the ancients; and also it seems as if the people who took a pleasure in lifting great stones, were smaller in person than their neighbours, and like ants gloried in co-operative arrangements by which they were enabled to work in masses, and thus exhibit evidence of national feeling."

Some discussion took place on this communication, the objection being raised that the quantity of crossing poles, to raise the weight, would go very far to increase that weight to a serious degree. The general feeling of the meeting seemed to be in favour of the theory of the late King of Denmark, as to the great covering stones of cromlechs having been moved to their position by the formation of inclined plains and the use of rollers to propel them, by great masses of people, up such inclinations.

THE CROMLECHS OF THE COUNTY WATERFORD.

Mr. G. V. DuNoyer, M.R.I.A., contributed a paper on some peculiarities observable in the cromlechs of the County of Wexford, minutely describing a number of those monuments, and supplying admirably executed drawings, to illustrate the paper, of the cromlechs of Knockeen, Gaultstown, Ballynagaragh, &c. After entering generally into the consideration of the original purpose of cromlechs, and classifying the monuments of the kind under the most appropriate names to be applied to the different types, Mr. DuNoyer concluded by remarking that—"So far as our present information leads us we must believe that the cromlech builders and the constructors of the chambered cairns and other megalithic structures, were of a race most wide-spread over the northern hemisphere, wherever it was habitable; that we have lost all record of the locality from whence that race originally sprung, or their name, or their language; and that the races who exterminated them were at the time so rude and unlettered that they had not the intelligence to transmit to their present descendants the traditional history of the people they dispossessed."

Amongst the other papers brought before the meeting, was a continuation of the Rev. J. O'Hanlan's notes on the Ordnance collections of the various counties, the present chapter being devoted to a list of the MS. materials for illustrating the history, topography, and antiquities of the County of Kerry.

Thanks having been voted to the various donors and exhibitors, the Society adjourned to the first Wednesday in October.

MUSIC.

Meet me at the Stile. By Richard Fletcher.
London: White and Co., Oxford-street,

Is a little ballad admirably adapted to the popular taste in drawing-room music, and to the ordinary capabilities of ordinary singers, and yet something better than this; the melody is simple, yet exquisitely pleasing, and is just the thing sung by a rich contralto with a little feeling and pathos to evoke the enthusiasm of an evening party. It is sure to be a favourite when known. The words are simple, and in harmony with the melody. The author, if little known to the musical world, will no doubt be more so if continuing to produce music of this popularly attractive character.

THE NATIONAL BUILDING AND LAND INVESTMENT COMPANY OF IRELAND.

THE above Company held a general meeting on the 27th ult. at their offices in Dame-street. The meeting was specifically for the election of three directors in lieu of three who retired agreeably to articles of association, but there being no other names submitted, the three retiring (Messrs. Bagot, Wight and Perry) were re-elected.

The secretary (Mr. William Daly) read the following statement of the progress made by the Company during the time it has been in existence, viz., since November last:—

"The directors, in presenting to the shareholders the following statement, have to observe that although the company's articles of association do not require them to submit any report or accounts before the month of July, 1867, they are desirous of placing before the proprietary, at the present juncture, some account of the position and prospects of the company.

The directors, in the formation of the company, did not avail themselves of opportunities within their reach, of placing their shares through the medium of London financial agents, preferring to bring the company before the public, and especially before the Irish people, as a *bona fide* project, claiming their support on the intrinsic merits of the undertaking alone.

In fulfilment of the declared objects for which the company was formed, the directors employed the first portion of their capital in the advancement of money to borrowers, in loans varying in amount from £100 to £3,000, for the acquirement of land and household property. A portion of these loans has been lent for the erection in this city of workmen's dwellings of a superior and useful character, similar to those in London and other places, which have effected so much good in improving the sanitary condition, and increasing the comforts of that important class of our population. The directors hope that these houses will form models for others of a similar character, to be erected by large employers, as well as by artizans themselves, who may gradually become the owners thereof, through the medium of this and other similar associations.

In making advances, the directors have carefully kept in view the interests of the shareholders in regard to the value of the property offered as security for them, and the titles under which they are held, believing that a strict supervision in this respect is essential to the safety and future success of the project.

The importance of extending the company's operations in the purchase and distribution of land in Ireland, has received an early and anxious consideration on the part of the directors, and they are happy to acquaint the shareholders that they have recently effected the purchase of a valuable property in the county of Mayo, containing upwards of 5,000 acres, which the directors expect will prove a profitable speculation, and afford a favourable opportunity for carrying into effect their views, in giving to deserving and improving tenants fixity of tenure, by granting leases, or otherwise, where practicable to do so, and carrying out improvements which, whilst they will tend to the present and future advantage of the tenants, will materially increase the value of the land; and they have the pleasure of stating that the company's surveyor has just submitted a most favorable report on the value and condition of this property, which will be read to the meeting. The directors believe there exists a large and profitable field in Ireland for this branch of the company's business, and hope that success in their first purchase may warrant their receiving such extensive support as shall enable them to acquire from time to time other Estates, which, when improved, can be re-sold or let on long leases to deserving tenants, and thus gradually add to the class of small landed proprietors, so much needed in this country, and which will more surely than any legislation tend to check emigration, and to promote the best interests of all classes of our population."

The secretary read an elaborate report from Mr. Henry Brett, C.E., (surveyor to the company) on the condition, value, and capabilities of the estate (Port Royal, Co. Mayo).

The Chairman—The statement you have just heard read leaves me but little to add relative to our affairs. We have issued shares only on *bona fide* applications, and the calls on them have been promptly paid—indeed a large number have been paid in full. We have granted loans to shareholders and others for building purposes, amounting to over £8,000—every loan being amply secured by the value of the property. We have purchased a large property which we fully expect will prove remunerative to the company, as you will have gathered from our surveyor's report, and which will afford us a favourable opportunity of putting into operation our plans for improving the condition of many of our fellow-countrymen who live by the produce of the

soil. I believe we shall in time to come become both prosperous and popular—popular, because our foremost aim is to strike a blow at Ireland's greatest, her almost only serious grievance—insecurity of tenure; and with a view to affecting this object we shall, on purchasing land, as in the present instance, see how it can be improved consistently with prudence, and having become acquainted with our tenants, we purpose to grant leases to such as appear industrious and deserving, and in some instances, possibly selling the holdings to such as have the means to purchase; and, having remodelled the estate to establish the tenants in security, we propose to sell out as soon as we can realize a fair profit, and go into the market again. Will not these people—uneasy and discontented, become happy and industrious, and interested in maintaining the peace of the country? In cities and towns our operations will prove equally useful and profitable, though, perhaps, not so national in their effects, and judging from the number of applications we have had for loans for building purposes from parties offering ample security, there can be no doubt our company, as well as its cousin, the Irish Civil Service Society (founded by our secretary) will have plenty of useful and profitable employment for their funds in this respect.

In reply to a shareholder, as to the tenure under which the tenants on the estate hold, Mr. Brett, surveyor, stated that they held at will.

Mr. Magrath—The purchase of this extensive property has, I presume, to some extent, restricted your means for accommodating persons who propose to build?

Chairman—It has for the present to some extent done so.

The Lord Mayor—We could have easily (to use a Stock Exchange term) "placed our shares" in England, if we desired to do so, at a cost, however, which we were not prepared to incur, and preferred the more legitimate and straightforward course of issuing them in Ireland, on genuine applications from the public. This may account for any deficiency that might be supposed to exist in meeting the extensive demands for advances made upon the company.

A Shareholder—I think, however, it would be desirable to encourage building as much as possible. I only mention this as a suggestion, but I consider the report a most satisfactory one.

After votes of thanks to the directors "for the energy and ability with which they have discharged the varied and responsible duties since the formation of the company," and to Mr. William Daly, the Secretary, "for the marked efficiency and ability with which he has performed the onerous duties of his office," the meeting separated.

STAINED GLASS.

A FINE stained glass memorial window has been placed in St. Michael's Roman Catholic Church, North Anne-street. It consists of one light. The subject illustrated is the Blessed Virgin crushing the head of the serpent, who is represented as having the world beneath him; above the figure of the Virgin is the emblematic pot of lilies, and beneath it an angel holding crowns. The ground-work and borders of the whole is rich in colour, and good in design, the details consisting principally of roses conventionally drawn. An inscription underneath records that the window has been erected by Miss Monica Bergin, in memory of her father, Mr. John Bergin, Inns-quay. The window is from the establishment of Messrs. Earley and Powells of this city, through the various departments of which we were last week courteously shown by one of the firm. The artistic branches in operation at these extensive works comprise (in addition to glass staining) stone and wood carving, mediæval metal turning and wrought-iron working, decorating churches, &c. Amongst the specimens of wrought-iron work recently turned out we may direct attention to a pair of gates placed at the Johnson's-court entrance to the Church of S. Teresa in Clarendon-street, and which will bear strict inspection.

THE LATE GEO. PETRIE AND HIS WORKS.

AFTER the death of Mulready, an exhibition was held in the year 1864, at Kensington, of his works, from the sketches of his early boyhood to the greater results of his fully developed manhood, which will be remembered by all who saw it as one of the most interesting and instructive they had ever witnessed. When also the great water-colour painter, William Hunt, died, his brother artists brought together a large number of his works for their annual exhibition, thus paying a tribute of affection and respect to the memory of their departed friend, and as it were, restoring his presence among them by once more placing the results of the long life of work of him, who had been their companion in labour, their teacher, and friend for so many years side by side with their

own. The same honourable feeling has impelled the members of the Royal Hibernian Academy, to unite with the exhibition of their own works this year, as largely a collection of the works of the late George Petrie, long their Secretary, and afterwards President, as could be brought together in this country.

Dr. Petrie commenced the study of art at a very early period. Though later in life he devoted his great powers to archæology and literature, he started in life as a landscape painter, in companionship with Francis Danby and others of similar aspirations, with whom he first studied in Wales in the year 1813. The results of his labours during this and later years may be seen not only in the large and finished paintings of Dolbadern Castle, Llanberis Pass, and others, but in the many exquisite half-tint drawings in brown and grey washes and pencil outlines, among which we would direct attention to the views of Menai and Conway. That the effect of these early tours in Wales, and the intercourse between these friends, exercised a mutual and lasting influence on their minds, and works there can be no doubt. Danby, in a letter, dated in 1846, writes to George Petrie:—"Your early works acted on me at first as inducements to become an artist;" and the high appreciation which Petrie's works, when exhibited in Somerset House, in London, in the year 1818, met with, sustained him in his devotion to his art. It has been observed by Ruskin that the influence of Yorkshire scenery may be traced throughout all Turner's works, as there he first studied, and, it is curious to observe how definitely may be seen the influence of Welsh scenery in all Dr. Petrie's works. In Wales he first learned to love the solitude and wildness of nature, her peaked and barren mountain scenes, her mystery and gloom, and, here, perhaps, also an inclination to a peculiar tone of colour, which is more characteristic of Welsh than Irish scenery, was acquired by him.

In the year 1820 the rage for illustrated landscape, annuals, and guide books, was at its height, and there can be no doubt that this fashion exercised on the whole a healthy influence on landscape art. A strong movement seems to have been commenced in the art of water-colour painting about this time, of which Turner was the exponent in England, Williams and Thompson in Scotland, and Petrie in Ireland. The amount of work done by the latter for engravers forms an important episode in Dr. Petrie's artist life; and the study of architectural drawing, which was necessary for many of the works he was employed in, proved of inestimable value in forming his style as a draughtsman. He supplied ninety-six illustrations to "Cromwell's Excursions in Ireland," twenty-one to "Brewer's Beauties of Ireland," sixteen to "Fisher's Historical Guide to Ancient and Modern Dublin," besides contributing to other works, such as "Wright's Tours," "The Guide to Wicklow and Killarney," &c. Many of the original half-tint drawings for such works have been secured for this exhibition, and some of them are now for sale.

So many objections have been raised as to Dr. Petrie's colouring that it is necessary to offer a few remarks as to his theory and method of working from nature. Painting was with him no mere mimetic art. He taught that as absolute reproduction of nature is impossible, the landscape painter's object should be more to translate than to copy. He cannot, for instance, give either the brightest light or darkest shade of nature, and though there may be medium tints in nature which are within his power to attain, yet if such are given by the hand which fails to reach the fuller tones to which these form the intermediate passages, the work is at once thrown out of harmony; the tones which should be secondary strike on the eye as vividly as those of primary importance for want of proportionate strength in those which are beyond the painter's power to reach, so that a certain portion of truth must be sacrificed in these medium tints. Partial truth must yield to general, and the painter must think of his work as of an instrument to be attuned by him to a key of a certain pitch, to which every note may be brought into subjection and harmony.

It cannot be said that the colouring of an artist who carries out the principle is "false." Some may complain that the pitch of key to which the work was set with Dr. Petrie was, at times, too low; but those who make this complaint should be very careful lest they fail to appreciate the marvellous skill with which the whole is kept in such just balance and subservience as to reach the very highest point of delicate expression.

This sense of harmony, this power of weighing and attuning a just balance of parts, making each work, however small, a perfect whole, was one source of the expression of deep repose in Dr. Petrie's works—conveyed, not only in quiet scenes, but in such effects of storm and mist as in his view of Shruel Bridge or the Fort of Dun Enghus. In the first-mentioned of these the skill with which grandeur and dignity is given to a group of mere cabins round a tower, shows a power of conception which belongs only to the great artist and composer.

Dr. Petrie's works may be divided under two headings—those which are merely landscape works and those which unite historic and antiquarian interest to the charm of truth to nature. The highest effort to the first class is, perhaps, the "Home of the Heron" in Lough Atri. The delicacy, tenderness, and transparency in the painting of this picture, the high imaginative power shown in the treatment of the subject, give it a high place among the highest efforts of landscape art in the kingdom. To the second class belong his views of the various ancient remains with which Ireland is so thickly covered, Pagan and Christian; her stone circles, cromlechs, holy wells, crosses, and the remains of her primitive churches, with their strange Cyclopean doors, her round towers and abbeys, down to the thirteenth and fourteenth centuries.

The interest which belongs to this latter class is not shared by any other works we know of. Other painters have brought picturesque ruins with effect into their works, but in no other artist do we find the historian and archaeologist so combined with the poet and painter. Dr. Petrie could contemplate such subjects as the fossil remains of a bygone race his reverence for ancient forms of faith stirring up his love and sympathy for these witnesses of them, and making such works invaluable to the historian as well as to the artist, from the union of their historic interest with poetic feeling, artistic treatment, and power of expression.—*Saunders.*

STRIKES AND LOCKS-OUT.

THE following remarks, taken from the columns of a contemporary, is so far in accordance with our views on the subject above named, that we make room for them as hints for the future guidance of our local working-men:—

A week or two ago we expressed opinions upon the vexed subject of strikes and trades' unions, which we felt pretty sure at the time would give offence both to masters and men. Our expectations have been perfectly justified by the result, and we are therefore gratified at such general testimony to the justice and impartiality of the views we expressed. There is no subject upon which anyone is surer to get into hot water than that of trades' unions and strikes,—there is no more delicate or dangerous ground possible for a writer to tread on, but as amendment will never be made if no one ventures to speak out with independence, we intend still further to pursue the subject of strikes and trades' unions, writing what appears to us the truth, without reference to any consideration whether it will give cause of offence or not. If masters and men will allow us credit for good intentions, we shall, as we said before, be obliged to them for it, if not we shall simply regret one-sidedness which cannot bear to hear a word of adverse argument. We recently spoke against the utter unfairness of upper and middle class men inveighing against associations of workmen as if they were little less than revolutionary societies. We pointed out that workmen have an inalienable right to combine to get a good price for their labour if they choose, and that to argue against giving the working classes an increased share of political power, because of their trades' unions, is protection carried to extreme. They have a right to combine to get the best price they can for their labour, and for employers to cry out against trades' unions, as if they were wicked dangerous associations, is utterly unreasonable. But right and policy are by no means the same thing. A workman has a perfect right to combine, and an inalienable right to strike if he chooses, but the policy or expediency of a strike is altogether another thing. We have risked condemnation by standing up for the workman's right to protect the value of the article he has at his disposal, and the workman must therefore give us credit for sincerity of intention when we condemn strikes as a very bad means of obtaining an end. A strike or a lock-out is a declaration of war, a struggle in which, not the party that is right, but the party that is strongest succeeds. Strikes are nothing more nor less than war, and like many wars, even the victor is a loser. We ask workmen and operatives, do strikes pay, do workmen get anything by them in the long run? For our own part we are tolerably sure they do not; not only are strikes to be regretted as a conflict in which no question of right is determined, in which nothing is decided but who is the stronger, but we believe that workmen lose money by them in the end.

For our part, regarding the question of strikes in its lowest and most material light, we believe that the expenditure caused in enabling men to strike swallows up in the long run much more than the men gain by striking. We put it to working men, which is the best outlay of money, the expenditure of a regular sum per week in a fund for striking, or its expenditure in a benefit society or savings bank?

We say to working men, though you have a legal right to strike, just as masters have to lock you out, though no one can abuse your trades' unions on any other score than that of inexpediency, do not strike but endeavour to settle your disagreements with your employers by some less ruinous and disastrous method.

There can be no disputing the assertion that of all the questions which the Social Science Congress could discuss with advantage, the subject of strikes, and the relations between masters and men is the most important. We own that the question is one of the most difficult and delicate possible, but the man would be a benefactor to his race who could invent some system, which would obtain general acceptance, of obviating conflicts between labour and capital, in which simply the strongest wins. The subject is just about as difficult as that of finding a method to prevent nations going to war. Austria and Prussia have just gone to war. People said that their dispute ought to be settled without an appeal to arms, and this was transparently evident, but still they have gone to war. *Disputes between masters and men ought to be settled without recourse to a system which only proves who is the strongest*, but the difficulty is as great as that of preventing nations from fighting. It cannot possibly be done by people asserting that trades' unions ought to be put down, nor could arbitration be imposed by law. This continual social warfare is without doubt a discreditable mode of settling disputes in the 19th century, and ruinously expensive both to masters and men. In the building trade, masters are afraid to take contracts lest the men should strike before their engagements are completed, work is scarcer than it would be, because capitalists dare not risk their money, and a town or city suffers because the supply of houses does not meet the demands of an increasing population.

Although we can no more expect the entire abolition of strikes than we can expect future European disputes to be adjusted without recourse to war, we hope that growing good sense and good feeling both of masters and men will show them that strikes are not only regrettable but unprofitable, and calculated to determine nothing more than who is the strongest. There are two things only which can prevent either war or strikes, mutual concession and agreement, or arbitration. Many strikes and wars have been obviated by the former, but the latter has hitherto been made little use of. It is worth the while both of masters, workmen, and potentates, to consider whether something cannot be done with this Great Un-used Power. In conclusion we ask people to bear in mind the example of the Amalgamated Society of Engineers, extending over the entire country, which, since its formation, has never had a single strike, but has been enabled to act the part of a benefit society, devoting all its funds to the relief of suffering and distress.

NATIONAL BUILDING AND LAND COMPANY.

IN consequence of the pressure on our space, we are reluctantly obliged to hold over until next number our editorial notice of the interesting and important meeting, held on the 27th ult., a report of which will be found in another column. Meantime we may wish this and kindred companies every success, particularly when their capital is directed to the improvement of our country.

TENDERS REQUIRED.

By the Sixmilebridge Drainage Board for the several contracts for drainage works in their district, according to the plans, &c., by John Hill, Esq., C.E., to 8th inst.

For altering and repairing a bridge in the town of Ennis, by erecting an iron superstructure on same, according to plans by County Surveyor, to 14th inst.

For steam-engine, boilers, pumps, cooking apparatus, plumbing, and other works at Clare Lunatic Asylum for the Commissioners of Control, in accordance with plans, &c., by A. C. Adair, Esq., to 20th inst.

For similar works at Wexford Asylum for same board, to 25th inst.

For a gas-making and gas fittings for Clare Lunatic Asylum, for same board, to 20th inst.

For building a Catholic Church, near Greystones, county Wicklow, to 13th inst.

For the erection of a set of Almshouses at Kilmough for the Commissioners of Charles Shields' Charity, according to plans, &c., by Messrs. Lanyon, Lynn and Lanyon, to 5th inst.

For the removal of the Old Bridge of Wexford, in accordance with the specification of the Trustees' engineer, to 11th inst.

MISCELLANEOUS.

The County Gaol of Cork is to be altered and adapted to the separate system, under the advice of Mr. Atkins. There will be 170 cells under central supervision, and it is to be sincerely hoped that four maiden assizes in one term are some kind of earnest for the future that a large number of these cells, when provided, will continue to want occupants to enjoy the 800 cubic feet of air and rations supplied. The galleries will be 14 feet wide, and there will be, in addition to other accommodation, a large department for debtors. A new chapel in the Romanesque style is to be built in the centre of the prison. May a hope be expressed that in the hands of Mr. Atkins this latter feature may assume an aspect somewhat different from the common type of gaol so-called chapels. It is quite time that, in spite of inconveniences as to communication between prisoners, &c., gaol authorities should begin to see that the building for religious purposes is not the place to perpetuate the convicts' most irksome punishment. Better we would say, put up with some inconvenience, and try to touch the hard heart through the ordinances of religion, by making the chapel as attractive and little disagreeable as possible—an oasis in the dreary waste of the outcast's life.

A curious book, says the *Athenæum*, has just been published at Paris, in which, under the title, 'Manifeste du Magnétisme du Globe et de l'Humanité,' the author, Captain Bruck, endeavours to prove that the destiny of the human race is influenced by the earth's magnetism. In like manner as the zodiacal light, shooting stars, and other natural phenomena are referable to an effect of magnetism; so are great events in the history of nations and of individuals. For example, the 9th of November is the day of least magnetic circulation and of least physical and moral energy, while the 22nd of June is the day of most circulation and most energy. The 18th Brumaire (November 9) was a memorable day in the life of the First Consul,—the 22nd of June saw the finish of the Empire. Then, again, it is to magnetism that certain great moral movements are due—Teutonicism in Prussia, Anglicanism in England, Gallicanism in France, and Catholicism in the Papal States. Moral philosophers will perhaps be amused at this mode of treating their special subject—whether science will be benefitted thereby is another question. Captain Bruck states that he is prepared for clamour, and to be treated as a dreamer.

Our contemporary, *The Grocer*, informs us that "Messrs. Carolin and Co., the well-known builders, are at present erecting a large additional warehouse for Messrs. W. and P. Thompson, Lower Gardiner-street, Dublin, which when completed will afford storage for 80,000 gallons of wine!! Mr. Joseph Thompson, engineer, of Horselydown, is fixing a powerful steam-engine and improved machinery by which the process of washing the bottles will be much facilitated." We have not had the pleasure of visiting these premises, which are in our immediate locality, but are happy to hear that the wine trade on our side the channel has so improved, and that the services of our respected neighbours (the Messrs. Carolin) have been required to extend the warehouse to such an enormous size.

A winding up petition was presented before the Lord Chancellor on the 20th ult. against the Cadiz, Oporto, and Light Wine Association (Limited), by Messrs. Barclay, Bevan, and Co., the well-known bankers, of Lombard-street, who are creditors. The cause was heard by Vice-Chancellor Wood on the 30th ult. The premises of the association in this city, and also in Kingstown, have been for some time vacated.

A countryman who was charged with ten gallons of whiskey, which a grocer put in an eight-gallon keg, said he "didn't mind the money overcharged, so much as he did the strain on the keg."

TO CORRESPONDENTS.

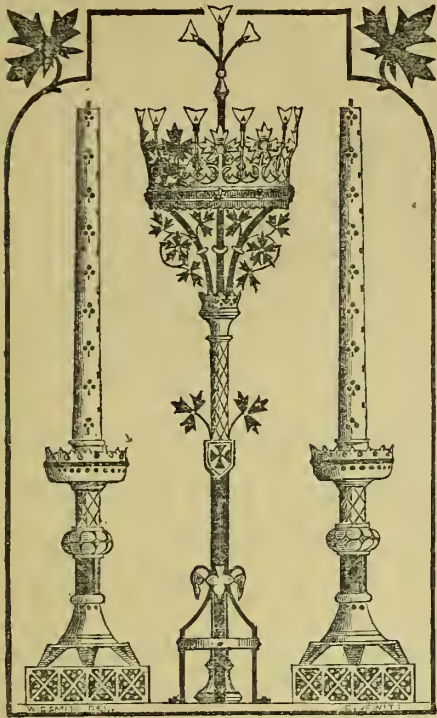
We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

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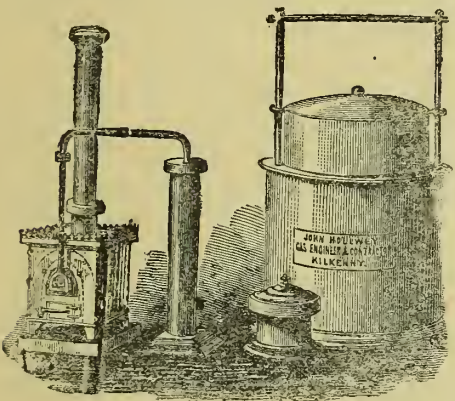


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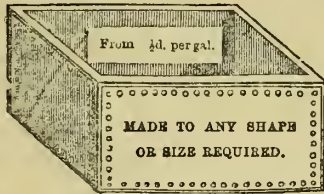
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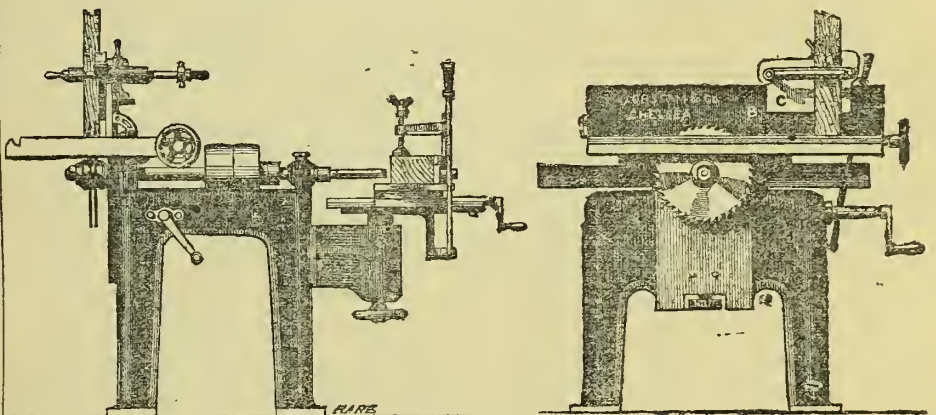
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The Right Hon. JAMES WILLIAM MACKEY, J.P., Lord Mayor of the City of Dublin, Mansion House, Dublin, and Clonsilla House, Clonsilla, Co. Dublin.

HENRY ROBERT PERRY, Esq. (Firm of Pim, Perry and Co.), 9, Burgh-quay, Dublin, and Idrome-terrace, Blackrock, Co. Dublin.

WILLIAM WIGHT, Esq. (Firm of William Wight and Co.), 23, Eustace-street, and Newenham-place, Upper Leeson-st., Co. Dublin.

Bankers—

THE BANK OF IRELAND, DUBLIN, and all its BRANCHES.

Solicitors—

JAMES DILLON MELDON & SON, 14, Up. Ormond-quay, Dublin.

Architects and Surveyors—

EDWARD HENRY OARSON, Esq., C.E., F.R.I.A., and HENRY

BRETT, Esq., C.E.,
Offices—25, Harcourt-street, Dublin.

The leading objects of the Company are the following:—
The advance of Moneys to Shareholders and others to enable them to Build or Purchase Houses, or acquire Land.

The Purchase of Land and Building Sites for redistribution to Borrowers on Sale or Rent.

The advances for these purposes may be repaid by fixed and easy instalments, according to arrangement.

The borrowers, under this system, are enabled to become their own Landlords, to live rent free for the remainder of their lives, and may bequeath the property so acquired as a provision for their families.

The Receipt of Moneys on Deposit in Large and Small Sums:—The present rate of interest allowed is FIVE POUNDS per Centum per annum, which will be paid half-yearly, or be added to the principal.

It will be seen by the foregoing that as a means of procuring property, whether in Houses or Land, or as an investment for large or small savings, the Company offers special advantages, and supplies a want which has long existed in this country.

As to SECURITY, the Directors have to observe, that their Funds are mainly invested upon Real or Leasehold Property, and the repayment of their Loans being by fixed and certain instalments, the security is constantly improving in value.

The beneficial effects of this system, in a Social and Moral, as well as Commercial point of view, are also, they submit, worthy of notice.

The best means of securing a contented and comfortable people is the possession of Property; past experience shows that this has everywhere tended to cement a union of interest and good feeling between the Operatives, the middle and wealthier classes; the ultimate effects of which must be to render the rights of Property more sacred, by its general diffusion through the Population. Provident habits are encouraged and fostered, and these once acquired are not readily relinquished. Intemperance and extravagance are incompatible with Economy, and where the latter prevails a gradual but certain improvement takes place; Men become better fathers, and better Citizens; their many energies are called into existence, they improve their position, and elevate themselves in the scale of society.

It is the intention of the Company, wherever they purchase Estates, to sell the holdings, or grant long leases to deserving Tenants, and thus create a class of small Landed Proprietors so much needed in this country, and which will, more than any legislation, tend to check emigration, and promote the best interests of all classes of our population.

By Order of the Board,

WILLIAM DALY, Secretary.

Offices of the Company, 27, Dame-street,
Dublin, 20th July, 1866.

THE INDUSTRIAL TENEMENTS' COMPANY (LIMITED.)

Incorporated under "The Companies' Act, 1862," by which each Shareholder's liability is limited to the amount unpaid on his shares.

CAPITAL, £20,000, IN 2,000 SHARES OF £10 EACH, WITH POWER TO INCREASE.
Of which not more than £3 per Share can be called up without the consent of the Shareholders being previously obtained at a General Meeting.

Deposit on application, Ten Shillings per Share; Deposit on Allotment, Ten Shillings per Share. No call to exceed One Pound per Share, nor to be made at intervals of less than Three Months.

If there be no Allotment the Deposits will be returned in full.

Directors—

HENRY MACLEAN, Esq., T.C., 69, Fitzwilliam-square, North (Chairman).

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JAMES CROTTY, Esq., Christchurch-place.

JOHN T. PURSER, Esq., 82, Janes-street.

ALDERMAN GREGG (Messrs. Gregg and Son), 18, Upper Sackville-street.

Bankers—

ROYAL BANK OF IRELAND.

Secretary (*pro tem.*)—

NUGENT ROBINSON, Esq.

Solicitor—

ROBERT EAMES, Esq., 34, Kildare-street.

Architect and Surveyor—

CHARLES GEOGHEGAN, Esq., C.E., 292, Great Brunswick-st.

Honorary Medical Officer—

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Temporary Offices—

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This Company has been formed for the purpose of improving the dwellings of the poor and labouring classes in the City of Dublin, by providing them with tenements having all sanitary requirements at moderate rents, on the principle adopted with such signal success in London, Edinburgh, and all the leading cities of Europe. Some companies established with the same object in view are paying dividends as high as 12½ per cent.

The preliminary expenses are confined to the actual outlay incidental to the formation of the Company, no promotion money, or any payment of a like nature, being sanctioned by the Articles of Association.

Copies of the Memorandum and Articles of Association lie at the Office of the Solicitor, 34, Kildare-street.

Detailed Prospectuses and Forms of Application for shares may be obtained at the Temporary Offices of the Company, at the Company's Bankers, and of any of the Stockbrokers.

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THE Subscribers, as Agents for Ireland for Messrs. Allan & Mann, of Glasgow, would invite the attention of Architects and Builders to the unrivalled Brick manufactured by this Firm.

These are, in every respect, superior to any other White Brick manufactured.

Sample boxes and Price Lists will be sent free on application to

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In consequence of the Public Fraud and Exorbitant Charges so often and so justly complained of, J. W. solicits his Friends and the Public not to permit their credulity to be imposed on, but to visit his Establishment and choose for themselves.

HIS PRICES ARE AS FOLLOWS:—

Tombstones—7 ft. long by 3½ ft. wide	..	£6 0
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Headstones—2 " wide by 5½ ft. high	..	1 10
Do. " " Ornamented	£2 to	2 10
Do. 3 ft. wide by 6 ft. high	..	3 5
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Monuments .. " " ..	from	£5 to 40 0
All of the very best Limestone.	No bad Stone used.	

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No money to be paid to any person but the Proprietor.

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SILVER PLATE for RACING, FIELD, or AQUATIC SPORTS.

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(Incorporated A.D. 1720, by Charter of George the First.)

CHIEF OFFICE—Royal Exchange, London.

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FIRE, LIFE, and MARINE ASSURANCES on liberal terms.

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Divisions of Profit every FIVE YEARS.

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No extra charge for service in the Militia, Yeomanry, or volunteer Corps within the United Kingdom.

A liberal participation in Profits, with exemptions under Royal Charter from the liabilities of Partnership.

A rate of Bonus equal to the average returns of Mutual Societies, with the additional guarantee of a large invested Capital Stock.

The advantages of modern practice, with the security of an Office whose resources have been tested by the experience of NEARLY A CENTURY and A-HALF.

FIRE ASSURANCES effected on every description of property at current rates.

FARMING STOCK assured generally at 5s. per cent. per annum.—The use of Steam Threshing Machines allowed without additional charge.

Tables of Rates, Scale of Bonus declared, and all other information, may be had on application to

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No. 5, COLLEGE-GREEN, DUBLIN.

By whom Bank Stock, Government Stock, and Debentures, and all other public Securities, are daily bought, sold, and transferred.

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AUGUST 15, 1866.

1st & 15th
OF EACH MONTH.

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THE CHURCH OF THE SACRED HEART, DONNYBROOK.

Contracts.

WAR DEPARTMENT CONTRACT.

NOTICE TO BUILDERS.

Office of Commanding Royal Engineer in Ireland, Dublin Castle, 6th August, 1866.

TENDERS are required for Works to be done in the Erection of Quarters for Married Soldiers, with Outbuildings and other Works in connection therewith at BALLINCOLLIG BARRACKS, IN THE CORK DISTRICT.

Persons desiring to Tender for the above Work must leave their Names at the Office of the Commanding Royal Engineer in Ireland, Dublin Castle, or at the District Royal Engineer Office, Cork, on or before Monday, the 27th day of August, 1866, and pay the sum of 10s. 6d. for the Bills of Quantities which will be forwarded to each Party as soon as prepared by the Government Surveyor.

TO CONTRACTORS.

ENGINEERING WORK AT WEXFORD COUNTY LUNATIC ASYLUM.

TENDERS are invited from competent Persons for Steam Engine, Boilers, Pumps, Cooking Apparatus, Plumbing and other Works, at the above Asylum, situated near Ennisconry, according to Particulars to be seen at the building, or at the Office of Mr. Farrell, Architect, at Wexford.

Sealed Tenders, endorsed "Tenders for Steam Works, Wexford Asylum," to be addressed to R. M. ARDAGH, Esq., Office of Control, Lunatic Asylums, Dublin Castle, on or before 20th day of August next, before One o'clock, endorsed on outside "Tenders for Engineering Works, &c., Clare Lunatic Asylum."

The lowest or any Tender will not necessarily be accepted. July, 1866.

TO CONTRACTORS.

ENGINEERING WORK AT CLARE LUNATIC ASYLUM.

TENDERS are invited from competent Persons for Steam Engine, Boilers, Pumps, Cooking Apparatus, Plumbing, and other Works for the above building, in accordance with Plans and Specifications, prepared by A. C. ADAIR, Esq., which may be seen at his Office in Ennis.

The Tenders are to be sent to R. M. ARDAGH, Esq., Office of Control, Lunatic Asylums, Dublin Castle, on or before 20th day of August next, before One o'clock, endorsed on outside "Tenders for Engineering Works, &c., Clare Lunatic Asylum."

The lowest or any Tender will not necessarily be accepted. July 23rd, 1866.

TO GAS CONTRACTORS AND ENGINEERS. COUNTY CLARE LUNATIC ASYLUM.

TENDERS are invited for a GAS-MAKING

APPARATUS, and GAS FITTINGS for the above-mentioned Building, in accordance with specifications and conditions prepared by A. C. ADAIR, Esq., which may be seen at his office in Ennis.

The Tenders are to be sent to R. M. ARDAGH, Esq., Office of Control of Lunatic Asylums, Dublin Castle, on or before the 20th day of August next, before Two o'clock, endorsed on outside "Tender for Gas Apparatus, Clare."

The lowest or any Tender not necessarily accepted. July 25th, 1866.

NOTICE TO BUILDERS.

BALLYNOCKEN GRANITE STONE, of the best quality, can be supplied in Blocks up to 8 ton, and in Lengths up to 16 feet. List of prices will be sent on application to JOHN BRADY, Ballynocken Granite Stone Quarry, Blessington, Co. Wicklow.

TO ARCHITECTS AND GENTLEMEN HAVING MANSIONS IN COURSE OF ERECTION.

HOGAN AND SONS, Stucco Plasterers, General Cement Workers, Modellers, &c., 168, GREAT BRUNSWICK-STREET, DUBLIN, beg leave to state that they are prepared to undertake Contracts in the above line.

Ornaments for Cornices & Centre-Pieces for Ceilings supplied. FRONTS OF HOUSES done in Portland or Roman Cement. Materials supplied.

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INDUSTRIAL TENEMENTS' COMPANY (LIMITED.)

Incorporated under "The Companies' Act, 1862," by which each Shareholder's Liability is limited to the amount unpaid on his shares.

CAPITAL, £20,000, IN 2,000 SHARES OF £10 EACH,

WITH POWER TO INCREASE.
Of which not more than £3 per Share can be called up without the consent of the Shareholders being previously obtained at a General Meeting.

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JOHN BAGOT, Esq. (Messrs. Bagots, Hutton, and Co.), 28, William-street.

JOHN J. ROBERTSON, Esq. (Messrs. Jameson and Robertson), 43, Marrowbone-lane.

JAMES CROTTY, Esq., Christchurch-place.

JOHN T. PURSER, Esq., 82, James's-street.

ALDERMAN GREGG (Messrs. Gregg and Son), 18, Upper Sackville-street.

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Architect and Surveyor—

CHARLES GEOGHEGAN, Esq., C.E., 202, Great Brunswick-st.

Honorary Medical Officer—

EDWARD D. MAPOTHER, Esq., M.D., F.R.C.S.I.

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The plans have been approved of, and the works will commence in a few days.

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Incorporated under "The Companies' Act, 1862," by which the Liability of the Shareholders is limited to the amount of their Shares.

The Shares have been fixed at TEN POUNDS EACH, with a view to bring them within the reach of all the investing classes.

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Vice-Chairman—ANDREW HERBERT BAGOT, Esq. (Firm of Bagots, Hutton and Co.) 28, William-st., Dublin, and 24, Leinster-road, Rathmines, Co. Dublin.

The Right Hon. JAMES WILLIAM MACKREY, J.P., Lord Mayor of the City of Dublin, Mansion House, Dublin, and Clonsilla House, Clonsilla, Co. Dublin.

HENRY ROBERT PERRY, Esq. (Firm of Pim, Perry and Co.), 9, Burgh-quay, Dublin, and Idrome-terrace, Blackrock, Co. Dublin.

WILLIAM WIGHT, Esq. (Firm of William Wight and Co.), 23, Eustace-street, and Newenham-place, Upper Leeson-st., Co. Dublin.

Bankers—

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Solicitors—

JAMES DILLON MELDON & SON, 14, Up. Ormond-quay, Dublin.

Architects and Surveyors—

EDWARD HENRY CARSON, Esq., C.E., F.R.I.A., and HENRY BRETT, Esq., C.E., Offices—25, Harcourt-street, Dublin.

WILLIAM DALY, Secretary.

Offices of the Company, 27, Dame-street, Dublin, 20th July, 1866.

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Being the cargo now landing ex Lightcliffe, from Santana.

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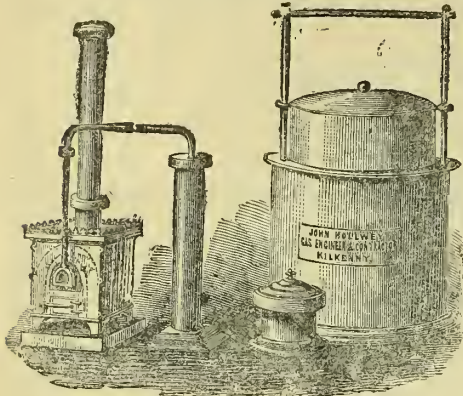
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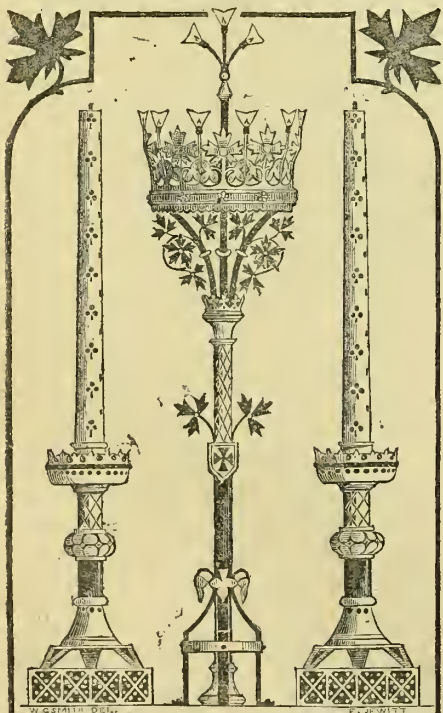
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WORKS for Villas, Mansions, Railway Stations, Farm Steadings, &c., or any Establishment where from 20 to 50 or more lights are required. These small works are both simple, cheap, and effective; can be worked by any ordinary laborer, and will produce Gas from Coal, Cannal, or Peat at a small cost. Larger sizes for Villages, Towns, and Cities.

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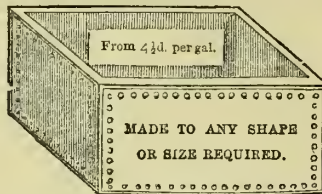
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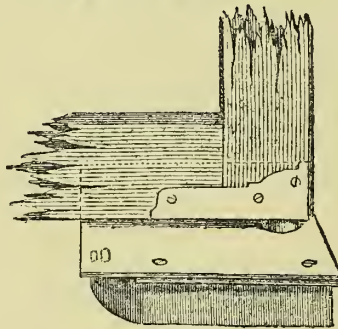
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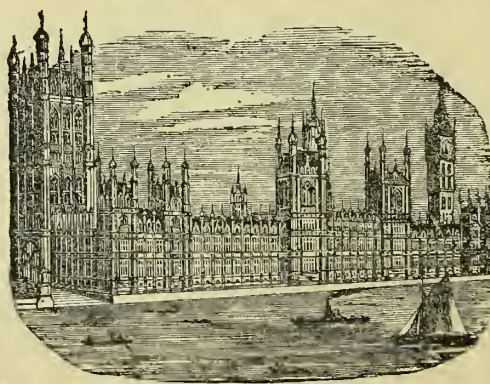
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The Dublin Builder.

VOL. VIII.—No. 160.

"BALD UNJOINTED CHAT."

SHAKESPEARE.

PROSPERITY.

NOTWITHSTANDING all we have heard of progress checked, of the flow of capital interrupted, and of general commercial prostration, resulting from the miserable Fenian visitation, it would appear to us that in this harvest season when we are able to take stock, and with sundry half-yearly reports of commercial undertakings before us, that things are not quite so black as they have been painted. For a country without any trade or capital it is astonishing to surmise what the different banking companies find to fatten upon. A modest advertisement, for instance, in a provincial paper which catches our eye, informs us that a local bank declares a dividend at the rate of 20 per cent. per annum, with a bonus of £2 per share on its older shares, and a dividend of 8 per cent., with a proportionate bonus on its newly-issued shares. This does not look so bad, and we could desire that we were numbered among the original shareholders of the Belfast Banking Company. This in Belfast—thriving, prosperous Belfast—no doubt, but still, we venture to say, the Bank of Ireland, the Provincial Bank, and others, whose operations extend over the south and west, have no such dismal tale to tell as the croakers would have us believe. Flax and fish at least are looking up. The Cork Fishing Company, with a capital of £20,000, of which the modest amount of £4,000 only has been paid, has *after four months' working declared a dividend of 15 per cent. on this amount, and carried forward £1,000 to its reserve fund.* The South of Ireland Fishing Company pays 10 per cent. and a large bonus, pays off its preliminary expenses, and starts with a respectable reserve fund.

These are but straws to shew capital afar off how the wind begins to blow in our field of industry. He who has his heart in his country's welfare and passes with a grateful spirit through the teeming corn-lands, will, among all the kindly fruits, find his eye rest with especial interest on that dark green patch of verdure with the tender blue blossom which so exquisitely modulates the changes of hue as it waves in the wind; for there, so far as human foresight can forecast, he sees presently the staple of Ireland's commercial prosperity. 225,000 acres of flax under cultivation, with a fair average crop in spite of the extensive failures in the cold unkindly spring, is a thing to do a man's heart good; and that this due to no epidemic enthusiasm on the part of the canny northern farmers may be gathered from the aspect of the flax capital, Belfast. So rapid has been the development of the linen trade through the impetus given it by the American war, that it seems as if any amount of capital could be profitably absorbed in it. Private enterprise has been inadequate to seize the golden opportunity single-handed, and limited liability has come to the rescue, and is developing this branch of industry on a remarkable scale. Several new companies with capitals ranging from £100,000 to £500,000 have been started, and as a proof of the soundness of the commercial undertak-

ing it is satisfactory to observe that the first established company—the York-street Flax Spinning Company—have with the utmost regularity since their gigantic factory was transferred to their hands, continued to pay half-yearly a dividend at the rate of 10 per cent. per annum, and this half-year add a sum of no less than £23,000 to their reserve fund.

But perhaps the most cheering phase of what is called the Flax movement is its extension to the south and west of Ireland, into districts hitherto strange to any industrial progress whatever. Capitalists are beginning to see the advantage of casting their lines in pleasant places by the Lee, Blackwater, and Shannon, and flax is beginning to be a familiar crop to southern eyes, and there is something in the very nature of flax-growing, in the immediate contact and prompt exchange which it brings about between the manufacturer and the farmer, which seems to adapt this product most happily to the condition and wants of the country. Looking abroad with this hopeful prophetic eye, the very noisome stench of the flax steeping-pool ceases to "stink in the nostrils," the prosaic many-windowed factory, and the tall reeking chimneys become "things of beauty" in the landscape, and the bye-stander can look complacently, with some feeling approaching to admiration, on the stream of rough-tongued noisy hands that come streaming from the mill gate, can in hand, at dinner hour, and forget their coarse gibes, their hard-favored countenances, their general oleaginous savour, and particular want of good-manners, in the fact that they are the bone and sinew of a great movement in the regeneration of his country.

ART IN PLASTER.

HAD space and time permitted in our last number, we would have desired to have made a letter from the secretary to the Amalgamated Building Trades, on the subject of art in the plastering trade, the text for a few remarks. Any discussion with the actual workers in any trade where it tends to bring us more in contact with them, and to advance our common interests, has a peculiar charm for us. Mr. O'Kelly, on the part of the trades, has taken exception to some remarks made by Mr. Geoghegan at Mr. Drew's lecture on plastering, in a fair and proper manner, although we fancy we see the subject under discussion with different eyes; or rather, having been present at the meeting, at which he made them, interpret Mr. Geoghegan's words as uttered in a far different spirit from the construction which Mr. O'Kelly and others who did not hear them, appear to have put on them.

It is the *spirit* in which criticism is given and received, not less than its truthfulness and discrimination, that constitutes its chief use and value. Whenever criticism of workmen and of art work has been offered in this journal, or by members of the Institute of Architects, we can vouch for it how kindly has been the spirit in which it has been uttered, with a true earnestness in the cause of progress, and more with that spirit of candour which should exist between friends than the captiousness of the mere critic. Shall we confess it at once, we fear that the discussion of these subjects appears to evoke a little amount of *touchiness* on the part of the trades which is rather unnecessary, and of which we wish in all kindly spirit to assure them. We are not speaking now merely of this isolated discussion, but of others which we knock our heads against day and daily. We insert in this journal some well-meant remarks on the state of art trades

in Ireland; forthwith follows a reply in the *United Trades Circular*, not unworthy of notice, not quite unjustifiable, but yet so evidently misconstruing the *spirit* of the article which evoked it, so failing to grasp the artist's point of view in which the criticisms were uttered, that we had not the heart then to enter into the discussion. Would that we could persuade the writer of this article, not less than our correspondents, Mr. O'Kelly and others, and every member of the building trades, that our objects are one and the same; that our whole, sole, and single aspiration in stirring such subjects is that advancement of the trades which we have at heart. Then, we would say, accept no criticisms from architects and others at least entitled to respectful consideration, in a spirit of resentment. The remarks on the state of the art trades in Dublin to which we have referred were but the echoes of the opinion of many architects, educated artists, and earnest men, and surely an opinion of theirs as artists on art work is a more competent one than that of the representatives of the trades merely. But with regard to this discussion on plaster work merely, we would desire to see the trades prolong it, solely with a view to eliciting from competent and unprejudiced sources a fair expression of opinion on the state and prospects of their trade, which they cannot estimate so fairly for themselves as honest and competent outsiders can.

We have not one word to say against the principle of Trades' Unions, which are inevitable. The Institute of Architects is itself a "regular" body; but there is a certain fallacy in certain "regular" bodies that a membership of a "regular" body constitutes an equality in standing which should, in some degree at least, be graduated by comparative competency. If this is true in a limited degree in a handicraft, it is absolutely so in an art. The Royal Academy, for instance, is a "regular" body, but if we wanted a grand dramatic suggestive picture, say the touching national story of "Lir and his Daughters," that would shadow forth the warning

"Of our Isle with peace and love,"

we would rather go to our countryman, Dan. Maclise, whose talents we wot of, and by whose works we know him, than take from the President and Council any artist they would 'send' us. Architects claim to be artists; which of us would wish, when we would arise and build, to have our architect chosen and sent us—as the Moravian Brethren get their wives—without our having our own views on the choice consulted, because they were all members of the "regular" body of architects?

Plaster modellers are or should be artists. Rightly or wrongly an impression is abroad among architects that in later years a high class of art-work has not been produced. We would say let the plasterers combat this impression, not by assuming in a wordy warfare that the "regular" body *must* contain artists, but by proofs of that ability which they claim to possess. Let them prepare and send forward to the Institute of Architects some genuine specimens of their skill in a high class of modelling, and, as they are really good, so we venture to say they will be received and appreciated. If good modellers are plentiful, the fact and their suppressed genius will be made known. Such works should, however, bear the authors' names. In matters of art it is idle to attempt to suppress the artist's individuality in the exaltation of his society, or school as it may be. Care should be taken that such criticisms, as Mr. Geoghegan and

others in their anxiety for art may think fit to utter, be received in the kindly spirit in which they are meant, where they are so meant, and that national pride and insular vanity be not laid to our charge by strangers, and form a bar to our healthy progress.

NOTES IN SPAIN.—IV.

ALCANADRE is a pueblo or small town midway between Logrono and Calahorra, situated a league or so to the left of the Camino-real to Madrid. As usual in the peninsula, these pueblos have no trade; and their inhabitants, having no other means of subsistence than that which they get by their primitive mode of agriculture, like as in Calahorra the inhabitants sally out each morning with their mules and donkeys to their little plots of pepper, garlic, and maize—the former being an article the Spaniard could not dispense with, no more than the garlic.

In my *entrée* to Alcanadré I was benighted, and had to find my way, as best I could, across the trackless moor and through the tortuous ravines for three or four miles between the main road and the pueblo. I had again to call into requisition the small store of Spanish I had acquired, by rousing a sleepy but watchful shepherd, in his "corral," from his repose, and inquiring if I was on the right road to the village, received an answer in the affirmative. I let my rosinante take his own way, and, trusting in God, after an hour's struggling through the mist I could distinguish friendly lights and the church tower of San Gregorio looming in the distance.

In passing in through the eastern gate, the first light I observed was from the "Posada," where Mr. Snodgrass, our old friend of Logrono celebrity, was supping with two other of "los Injineros Ingles" on roast rabbits and partridges, with grapes, apricots, and figs as a dessert—of course not excluding the vino Tinto and vino Blanco of the Rioja district, in which we were now sojourning for a time. The red and white wines of Spain help to give a body and *strengthens* materially the wines of Bourdeaux which we get as such in England as well as Paris.

Longed for the morning to see what the place was like, and found it to be a second and inferior edition of Calahorra; the same big gloomy, dusty-like church, also walled in—with such walls—rotten with age, and crumbling to decay like everything that Art has had a hand in in this interesting country, which Nature has been so lavish with.

The Tudela and Bilbao railway skirts the eastern side of the town, and dashes up the side of a steep precipice; at the end of this precipice we come almost right on the secluded and romantic hermitage of St. Gregory: his cell is under one of the ruined arches of the aqueduct to Calahorra, eleven arches of which are entire.

The "Ermita de San Gregorio" has a light kept constantly burning on the shrine. The cell was locked when I was there, but I got a peep through a cink in the door.

Wo—Don Henrico H—d and myself—crossed over the river a little below this place by means of (what they in Yankee land call) a "scow." When we got into Navarre I was struck with the desolate barrenness of this part of that province; we traced the aqueduct for about four kilometres, when it became lost to us in the hills. I could not but think of Macaulay's lines when I set my foot in this part of Spain—

"Now glory to the Lord of Hosts, to whom all glories are,
And glory to our sovereign liege, King Henry of Navarre."

The fact of this aqueduct pointing towards Calahorra partly proves the correctness of my theory concerning what travellers call a "naumachium" at that place, being none other than the site of the reservoir of the aqueduct under discussion. Met several coveys of partridges, and a hare or two, under the arches of the aqueduct. About a mile and a-half inland in Navarre came to the town of Lodoso: this pueblo is not like Alcanadré, perched on the summit of a hill, but built on the level plain that joins the Ebro; it is also windowless, as regards glass, like Calahorra.

H—d and myself visited what we were told is a chemical factory. We inspected some fine specimens of gypsum and alkali. The French beat the Spaniards hollow in chemistry, and it behoves us of these kingdoms to be on the *qui vive* or they may distance us as well as their southern neighbours. The manager, who was a Frenchman, pointed out everything of interest in this establishment with that proverbial politeness with which no other nation can vie—I conveying it to my *compagnon de voyage*, he being ignorant of French, although a good Spanish scholar.

I met with an accident on my return to Alcanadre that evening. The manner in which it occurred was simple enough:—On my ascending one of the steep hills outside the village, the girths of the Spanish saddle became loose and slipped down off the nag and I with it, and tripped up his hind legs; I slid down

his back but could not gather myself up time enough, when the spirited young "cavallho" came rolling after me and crushed me completely, rolling quite clean over me, but being a light kind of charger did not injure me much. I felt somewhat small for a moment—shook myself—and went to a "free and easy" hop the same evening with the other parties and my old friend "Mr. Snodgrass." These "Tatulos" in Spain are quite an institution of that country—they somewhat surprised me at first. You who are a perfect stranger go there without an introduction and no solicitation on either side. You dance yourself to the best of your power to the music of the eternal guitar; take a bunch of grapes and a glass of wine, or *agua-frio*, and retire impressed with the difference in the customs of the land you are then in and the one you left but three or four days ago.

We, the "Injineros Ingles" were chaperoned by the alcalde or mayor of Alcanadre, but not introduced to any one except the senora who owned the "casa."

It is time that I should digress from these running remarks on the country, and give a sketch of its much abused, yet interesting inhabitants. The character of the Spaniard must have altered for the better since those days when the guerilla and bandit chief was to be dreaded. I do not believe there is one of that class to be met with now from the Ebro to the Guadiana. The Spaniard has become a sober, frugal fellow; he drinks his wine—which is abundant everywhere—with moderation, and feels happy with his "potchero"—a dish, I was told, the queen of his country is so partial to that she never dines without it being on the table. This same "potchero" was revolting to my taste; it is a simple dish, made of a small piece of pork (about a pound and a-half), a Bologna sausage, and a lump of garlic. He is likewise moral, except with regard to words, and here the highest don in the country makes unnecessary use of the most blasphemous and obscene phrases and maledictions. His dress is not much unlike that of a Tipperary peasant in the neighbourhood of the Devil's Bit. I am describing now the natives of Alcanadré, and the Rioja. The old brown "cota-mora" (sometimes turned back in front, like Paddy's from Cork) the hottest day in summer may be seen worn in this part of the Peninsula; no sombrero or hat is used at all by the natives hereabouts; the men tie a coloured handkerchief round their foreheads, leaving the crown of the head bare, and canvas shoes, worn much like the Roman sandal, and the breeches also is much in vogue with the Basques as well. The christian names most in vogue I found to be Antonio, Ferdinando, Diego, Manuel, &c. The ladies of Spain have been rather a little *too much* extolled for their beauty: their figures are certainly classically straight and tall, the complexion "brown as the berry," hair invariably glossy black, the nose straight, lips well chiselled, and teeth pearly white; but the eye is the feature that struck me with most admiration—not the keen, intellectual hazel eye of the Irishwoman, nor the voluptuous blue one of our neighbours on the other side the channel, but—

" . . . large and dark, suppressing half its fire,
Flashed an expression more of pride than fire."

The eye of the Spaniard being in every instance a dark one, is in my opinion a proof of their Oriental or Moorish origin. The Spanish ladies dress very gracefully; if the French innovations in the way of chapeaux were not countenanced by those señoritas who love change, the mantilla should never be allowed to become obsolete in the land of the Cid.

The names I most admired among the belles of this classic land were Modesta, Helena, Isabella, Maria, &c. I did not admire such as Incarnation, Immaculate, Maxima, Escolastica, &c.

Rincon-de-Sota is a small village off the main road, midway between Alfarro and Calahorra. Don Guillermo, a nephew of the Governor's (Mr. Vignoles), and myself were guests of the Count Rodrigues one afternoon here. The Count gave us a *Ceal mille falthe*: he was a simple unostentatious Spaniard, contrary to what one would expect in a man who had his family arms engraved on a large white marble slab over the entrance to his "casa." It was really amusing to see those immense family shields over the doorways of habitations, however humble, in this proud country.

Senor Rodrigues had a very handsome young wife:

"Her glossy hair was clustered o'er a brow
Bright with intelligence, and fair and smooth;
Her eyebrows' shape was like the aerial bow,
Her cheek all purple with the beam of youth."

Next day went to have a battue at rabbits in the oak wood near Rincon; bagged a few brace; could not get a shot at a sort of bird not unlike an English partridge, which comes down from the highlands in twos and threes in this neighbourhood; it makes a burring kind of noise; its habits are similar to our wood-pigeon; it used to feed in the flats along the Ebro in this part of Spain, and I have not observed the bird elsewhere.

Dundalk, August 7th, 1866.

(To be continued.)

"HARD WORK."

THE above is the title selected by F. R. Falkiner, Esq., for a lecture recently delivered by him before the Downpatrick Mechanics' Institute, and which is fully reported in the local *Recorder*. We can find room but for a few selections from this very interesting and instructive lecture:—

Having had a thrice-repeated invitation to read a lecture to the Mechanics' Institute of Downpatrick, I have at length accepted it, though with considerable hesitation. I do not consider that I possess the right, either by knowledge or by wisdom, of teaching others. It seemed to me, however, that there might be more affectation in a reiterated refusal than in complying with the compliment thus paid me; and so I appear before you this evening—with no pretension to superior intelligence, with nothing new to impart—to give expression, in sincerity, to a few thoughts which have occurred to me on very common things. My subject is "Hard Work"—a very common thing in this work-a-day world of ours. I have chosen it as a subject on which, as a hard-working man myself, I could, without hypocrisy, claim sympathy with other workers, and I have been the more led to it by some talk I have lately heard addressed to what are called the "working classes"—language very vague and very wild—which is, in my humble judgment, calculated to make the hearers discontented with the lot which Providence has accorded to them, and to set them in opposition to the other classes of their fellow-Christians, their fellow-countrymen, and their fellow men. The leading idea I have had in drawing together my thoughts for this evening has been to show the sympathies which exist between the working classes and all others—to prove, by illustrations from real life, how much hope there is in the condition of the workman—how much to draw him towards the classes above—how little cause in him for opposition or repulsion. Those who address the working classes to flatter or inflame frequently speak to them and of them as if the workmen of these kingdoms were a class apart from every other in the social community—as if they, amongst all the diversified energies of the nation, had a monopoly of toil—as if they alone of the sons of men were called upon to obey the primeval law of labour. This supposed monopoly of hard work is sometimes spoken of in language of fulsome flattery, as a great prerogative, placing the operative not only apart from, but above the drones of society—the "privileged classes"—as these decalimers assume the rest of the community to be. Sometimes, in tones of affected sympathy, it is alluded to as a peculiar curse, to which the operative class alone are doomed. This talk is, according to my conscience, wholly untrue; and, like all untruth, is pernicious. Whatever be the motives of those who employ it, it is plain that this rhetoric must tend to keep the classes of the community asunder—to make men discontented; and, therefore, unhappy. The artisan taught thus to regard the ranks of society above his own will soon look upon them with suspicion, with distrust, with aversion. Soon, by a subtle law of evil human nature, he will attribute to them sentiments towards his class corresponding to the feelings he entertains towards them—contempt answering envy; aversion answered by disdain. Then, in the moments of depression which come, at times, to all of us mortals here below, he will learn to regard his own class as, indeed, a class apart, severed by the law of servitude, from the happy ones above them—formed, as it were, of some different material—moulded in God's image, indeed; but roughly so in plaster casts; whilst their privileged betters have been set up on pedestals, in sculptured marble. The language that gives rise to sentiments like these is untrue, and most opposite to truth. Work is not the isolator of society, but its best connective. It is in work, in hardest work, the artisan finds affinity with the highest orders of the human family—with the sublimely privileged of the sons of earth in every class and calling. Nothing good has been done by any man or men without hard work—nothing grand, sublime, or truly splendid. It is from the idlers, the triflers, the frivolous and worthless only that hard work can separate the workman; but it holds him in noble kindred with all other workers everywhere—labourers in the fields of fancy, of knowledge, and invention; of science, literature, and wisdom; sculptors, and painters, poets, philosophers, orators, divines, the high-priests of nature, the benefactors and adorners of mankind. For instance, the simple artisan, thinking on the life of a poet, may dream of it as something slight and unsubstantial,—why the toil of the imagination calls for the loftiest exertions of which man's faculty is capable. The very name of "poet," which we take from the Greeks, means a doer, a constructor, a worker. Those brilliant webs of thought and feeling in which the truths of

nature, both physical and human, are closely wrought in glowing colours, in exquisite designs, in graceful shapes, and flashing beauty, and which we call "poems," have not been planned and elaborated to be the heir-looms of the world without intense effort of the mental energy in the hearts and brains of the men

Who, through long days of labour,
And nights devoid of ease,
Still heard in their souls the music
Of wonderful melodies.

Talk of hard work—the hard work that bears men down, and brings them to untimely graves—I verily believe that more men have died prematurely from over-labour of the head than from over-labour of the hands. There was amongst us the other day an ornament of our judicial staff in Ireland, to whose memory I gladly pay a tribute of respect—the late most learned and most amiable Judge Hargreave. His judicial duties had of late years been somewhat light. The leisure thus obtained was turned to account in the highest and deepest walks of science. What I mention has been lately in the newspapers, and may, without indelicacy, be repeated here. There is a mathematical problem which, up to our time, has baffled the genius of the greatest brains in Europe. Judge Hargreave had applied himself to its discovery for many years. This year he forwarded to the Royal Society a proposed solution, and one morning he received by post a letter from the society, of thanks and congratulation, intimating that it was believed his solution was the true one. Some idea of the mental work required may be had from the fact, that a considerable time must elapse before the scientific world can verify his calculations. The shock of this letter disturbed the balance of his over-taxed intellect, and in a few weeks he was no more. No amount of natural genius can enable the man who would do great things to dispense with great labour. . . . And, as it is untrue that work is the peculiar fate or fortune of the working man, equally untrue is it that it separates his class from those above it. On the contrary, the working classes, by hard work, are made the continuous feeders of the middle and upper ranks of society. By perpetual movement upwards we see the different ranks refreshed and reinvigorated from time to time by new infusions from the ranks below. This law is so constantly in action that we might fairly liken it to a circulation of the blood in the corporate body of the community; and the power by which this upward movement is carried on is hard work, and the cognate qualities hard work engenders—prudence, courage, and self-denial. Thus society is kept pervaded by men whose experience ranges through many grades beside the one they actually occupy, and who can combine their sympathies for the ranks behind with their aspirations towards the ranks before them—thus does hard work appear, not as the dissolvent of society, but as the best combining agent of its varied elements—thus do the working classes appear no separate nation or Pariah race, but as the great militia from which the ordered ranks of society above them are perpetually recruited. Are not these truths as beneficent as those other falsehoods are mischievous and malignant. These give consolation to the child of toil. Side by side with the truth that tells him he is in the image of his God would I place that reminding him he is of the same mould as the aristocrats of human nature, and highest patterns of the Original Divine. And how much to calm and solace in the thought that society above him, so far from being banded against him, ever invites him to join its ranks by improving, elevating, and ennobling himself. Is not this a purer patriotism, as well as a truer philosophy, that, instead of seeking to consolidate the working classes into the angry foe of their superiors, would teach them to equal their superiors by being themselves superior. Believe me, the true reform the operative classes need is the improvement of the individuals that compose them. "If every man would see to his own reformation, how very easily you might reform a nation." No change of laws can take away labour from the earth, and raise, by Act of Parliament, the working classes to ease, idleness, and wealth. The working classes must exist, or the world would cease to continue. You may, by rude changes, pull down the upper ranks to the lower levels—dismantle the fair spires and graceful columns that adorn the edifice of society. You cannot repeal the law—"By the sweat of thy brow shalt thou eat bread;" but, by God's grace it can be changed into a blessing. In my humble thinking, this changed is not brought about for the working man by making him one of many thousand voters, but by his own strong arm and stout heart.

How small of all that human hearts endure
That part which laws or kings can cause or cure;
Still, to ourselves, in every place consigned,
Our own felicity we make or find.

Do not think this is the language of reaction or obstruction. I believe it to be the complete reverse.

. . . . Another falsehood the flatterers of the people repeat to them to their injury whenever they suggest to them that they toil solely for the benefit of the idle rich above them. This is wholly untrue or wholly unfair. Their toil is for themselves. In so far as it is for others, the toil of the workers is largely for their fellow-workers in the world; and, even when it is for the opulently idle, it would be just as fair to say that the opulently idle are opulent and idle solely for the benefit of the working classes as to say that the working classes labour solely for the benefit of these. Take wealth, rank, and idleness in some more striking phase. Enter the halls where high station and magnificence meet in sparkling assembly. The tjara of diamonds which dazzles from the brow of beauty was placed there, doubtless, without much labour on the part of the wearer. How, think you, would it look elsewhere, worn by the real workers—by the subterranean Titans who dug it from Golconda mines; or by the rough artisan who wrought it in its several stages? We hear of the Californian and Australian diggers cutting most fantastic figures with golden studs, tremendous rings, stupendous scarfpins—not knowing how to employ their suddenly won treasures; and the other day I heard that a favourite amusement with these luxurious working classes is to contend which will eat the most bank notes in the layers of their sand-wiches, for the law of emulation is a wondrous one, and takes strange forms in every rank. These poor fellows, after all, only repeat the folly of the vile Roman Emperor of old, who caused a diamond to be melted with his wine cup, that he might boast he had swallowed £6,000 at a single draught. And those who excite the jealousy of workers by pointing their attention to idle lives would act more fairly if they did not falsely suggest that the idle life is necessarily one of easy joy.—"In idleness alone there is perpetual despair" says Thomas Carlyle; and Sir Charles Napier has written—"The most troublesome of all troubles to me is having nothing to do—a two easy chair is the rack for me." Those who think idle ease synonymous with happiness forget, alas! that the hard work of the worthless is worse than the labour of breaking of stones. They forget the miserable workings of vanity, the ignoble strife, the struggles—oh! how much more vulgar than those of poverty—the struggles to be thought *genteel*; the mean attempts of keeping up appearances—the saddest labour of the wholly unemployed.

Their only labour is to kill the time,
And labour dire it is, and dreary woe.

To kill the time which, perishing, leaves the future even less and less, the time which, killed, gives place to an eternity. But, the reflection which, perhaps, more than any other, might disarm the jealousy of the man of work witnessing the softer fortunes of the man of wealth, is to be found in the truth, that acquired wealth and the leisure it brings are themselves almost always the product of past toil. These are as assuredly connected almost as in any other case of cause and effect. The luxury of to-day represents the economy of yesterday—the money-spenders of this year are the sons and daughters, the grandsons and granddaughters of years gone by—the "four-in-hand" that dashes to the race-course, with its four blood-horses in front and its dozen dandies on board, is the lineal descendant of the cart and draught-horse. Lord Dunsinno dresses four times a day, and yawns four thousand times, and does nothing more or better—and, yet, his four suits were as surely purchased by the thrift and industry of the old bricklayer, Mayhap, who founded the family, and laid the first stone of its noble house four generations since, as was the grey fustian of that old gentleman himself. Riches, viewed from this point, no longer seem unjust, but essentially founded in justice. Thus, wealth appears as the reward of labour, and no fair subject for its envy. . . .

I have thus dwelt at length on the connection between the working class commonly so called and the peerage of England, because it most strongly illustrates the arguments I had proposed; for, if labouring men have thus been found to climb the social ladder to its very topmost round, we need hardly pause to show how stopping short of the topmost there is no intermediate grade to which they do not similarly, from time to time, attain; short of the peerage are innumerable posts of honor. Throughout the range of the middle classes—amongst the gentry, the professions, the merchants, the manufacturers, the civil service, the shopkeepers of the country, we find, on all sides, teeming instances of men who have raised themselves from the position of their birth by energy and toil—who, if they have not risen to the grade invidiously called the "privileged class" have won what Burns so finely calls "the glorious privilege of being independent." And, in like manner, looking at the vast acquired wealth the middle classes of this 19th century enjoy, it will be found to represent the hard

work either of its actual possessors or of those from whom they inherit it. Going no further than this Province of Ulster and its staple trade, how many splendid fortunes have been made, and respected families founded by men whose early labour was the labour of their own hard hands? . . .

Seeing the sons of successful labour thus continually rising from time to time up the manifold tiers of the middle and upper ranks, who would tell the working men that those ranks are separated from his by an untraversable barrier? Do not the social facts I have referred to by instances demonstrate that the whole social fabric is a single framework—that the space which separates the poor mechanic from the noblest duke, is not a pathless gulf unapproachable, impassable; but a fair and open road, doubtless up-hill, but measured out in defined gradients, and stages clearly marked, and trodden by numerous travellers each day and year? And let not the working man, who remains the working man all through, and lives his whole life in the condition of his birth, forget that, though he may rise no higher, his condition is as compatible as any other with the development of the greatest qualities that elevate mankind—with self-control, self-conquest, high courage, heroism, fortitude. "Virtue" is derived from a word which means "manhood;" virtue and manhood in their best sense may be his. And let no man imagine that the power of doing good to others is out of the reach of working men.

BELFAST HOSPITAL FOR INSANE.

WE learn the following particulars from the last report of the Belfast Hospital for Insane, respecting the scant accommodation afforded in that institution for its inmates:—

"The house at the present time contains three hundred and sixty inmates—one hundred and ninety-six males, and one hundred and sixty-four females; there is only accommodation, properly, for three hundred and thirty, and this, too, with only the minimum cubical space to each patient, so that this trenching upon breathing space so largely by an excess of thirty, and frequently more, when some pressure from without occurs for the reception of urgently dangerous cases, is a matter of serious importance, but still is unavoidable. Agreeably to the Board's instructions, as many harmless cases as possible of the chronic class have been endeavouring to be handed over to their friends and sureties, in order to enable new and probably curable cases to be taken under treatment, it being an established fact that, in no disease 'which flesh is heir to' is it of more consequence that early professional treatment should be had recourse to than that of insanity, every day's delay being of vital moment as to the ultimate issue. The outstanding cases in ordinary awaiting admission, as vacancies can be made, are at the present time but three. There are, however, between forty and fifty in the County Down Goal, committed as 'dangerous lunatics,' and about six in County Antrim Goal of the same class."

In noticing the progress of the County Down New Hospital for the Insane, it says:—

"In last year's report it was stated that this new and much-required institution was then about being actually commenced erecting; and it is now satisfactory to know that the works in connexion therewith are in active progress; but allowing for every expedition being used in its erection, its readiness for the reception of patients is possible, perhaps, in two years hence, but not very probable, judging from past experience in regard to the building and completion of these establishments, even under the most favourable and promising circumstances."

Some time ago there was an account in the newspapers of the way in which a large building at Chicago was being elevated by means of screws. The success of the operation has induced its repetition, and we now hear of a large hotel being raised by 1600 screws. An American paper tells us that the building is a massive brick structure, with mastic facing, five stories high, and with a front of 80 feet in one street and 180 feet in another. To raise this immense weight from its foundation, and elevate the entire mass four feet and two inches, can have been no trifling matter, though in Chicago, where this sort of thing originated and has been practised so frequently, little more is thought of it than would be of the moving of a wooden building from one place to another. The foundations having been excavated, and the timbers and screws put in place, a very large force of workmen, together with a number of "invited guests," manned the 1600 screws, and at a given signal, the levers were set in motion, and the huge structure, lifted by the irresistible power of the screw, began its upward journey. The cost of elevating the hotel and building up the foundations is estimated at 30,000 dollars.

THE CORPORATION—THE LODGING-HOUSES—OUR DIRTY CENTRAL MAIN SEWER!

THE CORPORATION.

For whatever else our Municipal Council, individually and collectively, may be open to censure, there is one thing of which we cannot possibly acquit them—we mean their want of punctuality in attending meetings, particularly those specially summoned for the consideration of sanitary matters. On Monday week a quarterly meeting was called for *twelve o'clock*, and nearly an hour and a-half elapsed before a "house" could be made. The first matter discussed was an address to the Marquis of Abercorn on his arrival as Lord Lieutenant. Then came the very important subject, at the present crisis, of the carrying out of the bye-laws for regulation of

LODGING-HOUSES.

In reference thereto the town clerk read a letter received by the Lord Mayor from the Sanitary Committee through their secretary, Sir Drury Jones Dickinson, and which is as follows:—

"My LORD MAYOR,—I am directed by the Sanitary Committee to explain the difficulties which they have experienced in endeavouring to carry out the bye-laws for the regulation of lodging-houses under the Dublin Improvement Amendment Act, 1864. A conviction was obtained in the case of Michael Ganly, in May last, at the Head Police Office, under those bye-laws, but an appeal was forthwith lodged in the Courts of Common Pleas and Exchequer. The magistrate's decision was confirmed in the former court before three of the judges, but has not yet been heard in the latter. The magistrates at the Head-office, on last Friday, determined not to convict in similar cases until the appeal shall have been decided in the Court of Exchequer. This cannot be until next November, and the committee is advised by the medical officer of health that such delay will be fraught with most disastrous consequences to the health of this city, as in many cases the cleansing of premises set in tenements is resisted by their owners."

D. J. DICKINSON, Secretary.

In the course of a debate which followed the reading of above letter, Mr. Norwood observed that he had been concerned in the proceedings alluded to. The judges almost immediately decided against the appeal. A similar appeal was brought before the Court of Exchequer. He had himself asked the Lord Chief Baron to make some arrangements in order to have the appeal heard, by sitting *in banco* on a day out of term. Great public inconvenience had arisen from the course pursued, which might lead to disastrous consequences to the city, in the Corporation not being allowed to put the sanitary laws into force. If the magistrates were informed that the appellants did not intend to proceed further in the matter, they would act accordingly.

Mr. Byrne would suggest that a resolution should be passed by the council, enclosing a copy of Sir Drury Dickinson's letter to the law officers of the crown, or to the Chief Secretary, or Sir Thomas Larcom, and calling their attention to the matter, so as to have it laid open, in order that the magistrates should see that the appeal would not be proceeded with, and that the public might decide whether or not the Corporation was blamable in the matter.

Mr. Norwood asked the late Government to take cognizance of the matter, but the reply he got was, that the appeal should be heard, and if it went against the Corporation, they would then consider what should be done. At present it had practically gone against the respondents. A shorter method would be for the Government to run a short bill through Parliament explaining anything that was obscure in the clauses.

Mr. McGrath thought it was to be regretted that the Lord Mayor, although chief magistrate of the city, could not adjudicate on cases affecting sanitary matters.

It was resolved that Sir Drury Dickinson's letter be sent to Sir Thomas Larcom for the consideration of the law officers of the Crown.

OUR DIRTY CENTRAL MAIN SEWER!

Alderman Dillon, in introducing the subject of the purification of the Liffey, said that many of the charges made against the Corporation from time to time were altogether unfounded, and that the rates of this city, to a large extent, were independent of municipal control. The only rates of which they had the management were the water-rate, the improvement-rate, and the sewer-rate; and as far as the administration of these were concerned, he contended that the Corporation was not open to blame. The question which he was bringing before the council was more immediately connected with the sewer-rate; and, therefore, he thought it necessary to say that within the last few years, 25 miles of new sewers had been constructed, and eight miles of sewers had been repaired. The result of these extensive works was that two pence in the pound of the sewer-rate would hereafter be available for the purification of the River Liffey. That would amount to £4,000 a year, or, if capitalized, £80,000. Several plans had been suggested for the cleansing of the river, and he believed that a mode suggested by Mr. Neville would be brought before the committee. This plan,

like that which was being carried into effect in London, recommended the construction of two main sewers on each side of the river, for the purpose of intercepting the sewage which would be carried out to sea and emptied at a higher level, so that hereafter it might be utilized. It was possible that the construction of a dam at Carlisle-bridge might form part of the plan. It had been computed that about £80,000 would suffice for the construction of the sewers, but half of that sum would complete a system that would answer for some years. After some further observations on the necessity of taking immediate action in the matter, Alderman Dillon concluded by proposing his resolution:—"That the question of the purification of the River Liffey be referred to a select committee, comprising Aldermen Bonsall, Plunkett, Dillon, Joynt; Councillors Purdon, Byrne, Ryan, Sir John Gray, Maclean, Norwood, Graham, and Mackey, with power to the said committee to obtain such professional advice as they may deem it necessary, in addition to that of the City Engineer."

Mr. Norwood seconded the motion, which after some remarks from Mr. Whelan, was passed unanimously, the name of the latter gentleman having been added to the committee.

NEW CHURCH OF THE SACRED HEART, DONNYBROOK.

THIS Church, of which we give the north-west view as our Illustration, has been erected on a most eligible site at the intersection of numerous public thoroughfares at the Donnybrook Bridge, and in close proximity to "the Green."

The church consists of nave, aisles, chancel, side chapels, south porch, sacristies, &c., with a tower and spire at the north-west angle. The dimensions are:—length, 146 ft., total width, 60 ft. 6 in., width of aisles, 13 ft., height from floor to ridge, 59 ft., height of tower and spire, 151 ft., of which 73 belong to the tower. The aisles are separated from the nave by an arcade of six arches, resting on polished Cork marble shafts, with carved Caen stone capitals, and base mouldings of Carrara marble, resting on plinths of Kilkenny marble. The aisles are lighted by lancet windows, three to each bay. Arches are thrown across between the piers of nave arches and the aisle walls, resting on the caps of nave columns and the aisle walls (the buttresses show their position externally), serving as flying buttresses to the clerestory; the effect of this arrangement internally is very pleasing. The clerestory is lighted by cinquefoils, two to each bay. The chancel end is semi-octagonal, each side pierced with a two-light window, filled with stained glass; these windows have gablets rising into the apsidal roof.

The side chapels, which terminate the eastern end of the aisles, have richly traceried rose windows, and are separated from the chancel by an arcade of two arches.

The sacristies are grouped round the apse in rather a novel form. The aisle walls are continued down 13 ft. clear of the rear wall of spire, having a passage in the centre, the sacristies being arranged right and left of this passage. The entrance to the church is in the centre of the wall immediately behind the high altar.

The organ gallery is over the western end of nave, supported on an arcade of three arches, with marble shafts, &c.; under the organ gallery internal porches are formed.

The roof is open, with arched principals, two to each bay, having ornamented dormer ventilators, one in each bay.

The principal feature externally is the rich rose window in the west front, beneath which are a row of niches, to be filled with statues hereafter. In this front is the principal entrance—a fine bold doorway, with a richly carved tympanum, by Earley and Powells, who also executed the cross on west gable. There is an entrance also through the tower on the north side.

All the ironwork (except the cross on apse, which is by Skidmore, of Coventry) is very creditably executed by Mr. Fagan, of Great Brunswick-street, from the drawings of the architects.

The works have been completed (excepting the spire, and the enclosing wall and lich gate shown in the view) in the most creditable manner by Mr. Michael Meade, builder, of Great Brunswick-street,

Dublin. The high altar is being executed from the designs of the architects, by Mr. O'Callaghan, of Bachelors' Walk, Dublin. It will be an elaborate work entirely of marbles of various colors; the carved panels, three in number, will be in Carrara; the columns will be alternately of green and red Irish marbles. (We understand this beautiful altar is the gift of a lady member of the congregation.)

The style of the church is Early French; the details throughout evidence much careful thought and study on the part of the architects, Messrs. Pugin and Ashlin, of Stephen's Green and Ely Place, Dublin. The cost up to the present has been about £7,000.

The ceremony of opening the church will take place on Sunday the 26th inst.

THE NATIONAL BUILDING AND LAND INVESTMENT COMPANY OF IRELAND.

THE report of the first Ordinary General Meeting of the above-named company appeared in our number for 1st inst., and we would now draw attention to it, as affording important and gratifying information respecting the progress made made by that national undertaking.

The company has been in existence but eight months, and in that time, its business has been of an extensive nature, showing that it has already obtained a position which augurs well for its future success as a sound commercial speculation.

It appears from the statement made at the meeting that the company has already entered actively upon that portion of their operations embracing the dealing in land, and that they have acquired by purchase an estate in the County Mayo, consisting of 5,000 acres.

The importance of extending the company's business in this respect cannot be too highly valued, as there is no greater evil to be overcome in Ireland than that which causes our peasant population to feel discontented with their position, and forces them to emigrate daily to foreign lands, where they can become eventually possessors of the soil tilled by their own hands, and which they can bequeath to their children.

The other portion of the company's business mainly consisted in the advance of money for building purposes, and we find that it has lent over £8,000 to persons for procuring property of that nature, a portion of it being advanced for "erection in this city of workmen's dwellings of a superior and useful character, similar to those in London and other places, which have effected so much good in improving the sanitary condition, and increasing the comforts of that important class of our population;" and which the directors hope "will form models for others of a similar character, to be erected by large employers, as well as by artisans themselves, who may gradually become the owners thereof, through the medium of this and other similar associations."

The dwellings referred to in the report are (we understand) being erected by Messrs. Walpole, Webb and Bewley, the eminent ship-builders, in the vicinity of Sheriff and Mayor streets.

The Congress of the British Archaeological Association will be held at Hastings, beginning on the 20th inst. The programme is as follows:—Monday, Hastings, reception by the mayor and inspection of the local antiquities; Tuesday, Rye and Winchelsea, Brede and Camber; Wednesday, Bayham Priory and Mayfield Palace; Thursday, Bodiam Castle, Etchingam Church, Battle Abbey and Church; Friday, Hurstmonceau Castle and Church, Pevensey; Saturday, Lewes, reception by the Sussex Archaeological Society, inspection of Lewes Castle, Priory, &c.



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THE ANNUAL CONGRESS.

THIRD DAY.

On Thursday the proceedings began with the reading of papers at the Royal Institution and the Museum in Jermyn-street. At the former place, Mr. Beresford Hope, M.P., inaugurated the architectural section with an address upon, in the main, the architectural features of London past and present, and the causes which had led to their peculiarities. Within the memory of many, he said, some parts of London had still retained their mediæval aspect, but so rapid had been the changes that few isolated remnants now remained, and these were likely too soon to be obliterated, and not even a bare catalogue of its most notable relics of architecture had been made. Mr. Hope cited many instances of the notorious vandalism of the eighteenth century, as well as many unavoidable beneficial removals, in respect to which, however, it was much to be regretted that drawings and plans of the interesting objects demolished had not been preserved. Amongst such objects he especially referred to St. Katherine's Hospital and the fine church of the 14th or 15th century, which had succumbed to the making of the well-known extensive docks. No one could denounce the ravages necessary for so important a commercial work; but it was a shame that such a memorable and noble edifice should not have been rebuilt on some other site, and have been made the nucleus of the much-wanted cathedral for the east of London. He hoped that in the present meeting the foundation would be laid for a proper architectural survey of London.

Dr. Guest next gave a discourse of the highest value, combining one of the most convincing accounts of the passage of Cæsar across the Thames, with an admirably lucid narration of the progress of the campaign of Aulus Plautius. The crossing of the Thames, Dr. Guest stoutly maintained, in spite of the opinions expressed in the second volume of the Emperor Napoleon's "Life of Cæsar" to have been at the Cowey Stakes, near Kingston, the position of which was the exact distance of 80 miles from the sea, as stated by Cæsar himself.

The papers read at Jermyn-street were not less interesting, the inaugural lecture on antiquities being delivered by Mr. Samuel Birch, and a paper on the "Mint of Roman London," by the Count de Salis. At one the adjourned meeting of history and architecture assembled in the Chapter House of Westminster Abbey; the ancient and memorable building was crammed, and the concise, eloquent narration of the heart-stirring history of the abbey, by Dean Stanley, met with the highest applause. A report of this paper recently appeared in the *Building News*. After the dean's discourse the members attended afternoon service in the abbey, and then resumed their proceedings in Henry VII's Chapel, where Mr. Westmacott discoursed on the sculpture. An adjournment was then made again to the Chapter House, where Mr. Gilbert Scott read a paper on the architecture of the abbey.

In the evening Mr. Hephworth Dixon lectured at the Jermyn-street Museum "On the Tower of London." Set against the Tower of London he said with its 800 years of historic life, its 1900 years of traditional fame, all other palaces and prisons appear but of yesterday. The oldest bit of palace in Europe, the hurg in Vienna, is of the time of Henry III.; the Kremlin in Moscow, the Doges' Palazzo in Venice, are of the 14th century. The Bastille is gone, and the Burgello converted into a museum of peaceful arts. Vincennes, Spandau, Spielberg, Magdeburg, are all modern in comparison with the gaol in which Ralph Flambard, our unruly Bishop of Durham, was confined so long ago as 1100, the time of the first crusade. Mr. Dixon devoted himself more especially to the most prominent of the personages who as royalty, guests, or prisoners, had resided within its walls, beginning with Henry III., who was fond of living in the Tower, and spent a good deal of money in building new works, to the great annoyance of his people, in whose eyes it was the refuge and weapon of a tyrant. The lecture, which was replete with telling incidents, was listened to with marked pleasure. Another lecture was delivered by Mr. George Scharf at the Royal Institution "On the Historical Paintings at Windsor and Hampton Court."

FOURTH DAY.

Friday's proceedings commenced with Mr. Parker's discourse at the Royal Institution, "On the Castle at Windsor." This valuable narrative, the materials of which have been gathered under special facilities afforded by her Majesty, we shall notice in our account of the visit to Windsor.

Mr. Parker was followed by Professor Willis, "On the College at Eton." He prefaced his account of Eton with some introductory remarks on the general history of colleges and their growth. In the early colleges the buildings were very simple, and the ac-

commodation was generally little else than chambers to lodge in, these often being furnished by some hostelry bought for the occasion. The first college was that of Oxford, by Walter de Merton; one was founded at Cambridge soon after, and others followed at intervals up to 1379, when in the new college at Oxford William de Wykeham erected the first architectural building, complete in all its details, and so well organised as to serve as a basis for all subsequent erections. His plans also included the then new feature of a preparatory school for young boys. The professor next proceeded to the consideration of King's College, Cambridge, and its appendage, Eton. Prof. Willis detailed the original plans for Eton College as set forth in Henry VI.'s "will"—this will being, however, not a "last will and testament," but in reality a building specification for his colleges, in which so clearly has he laid down his plans that the lecturer was able to transfer them to paper, and to exhibit a diagram of the ground-plan to his audience as a basis for comparison with the actual buildings subsequently erected, and forming the present condition of Eton in 1866. The King soon enlarged his plans, and the professor has found amongst the valuable series of papers still preserved at the college the original draft with the dimensions erased, and enlarged dimensions inserted in the King's own writing. The choir of this larger collegiate church only was erected, the body never having been built, by reason of the King's misfortunes. Professor Willis then pointed out the various retrenchments which took place in the carrying out of this larger plan, and noticed various topics of interest, such as the peculiar features of four staircases at the interior angles of the quadrant, communicating by a general gallery with the doors of the dormitories, the usual plan in colleges being a separate stair between each two sets of chambers.

In the afternoon a visit was made to the Tower, under the guidance of Mr. G. T. Clark. The party entered by the bulwark or barbican, proceeding through the Middle tower, past the Bell tower, to the quay, where they inspected St. Thomas's tower and the Traitor's gate; thence they proceeded to the Salt tower, where the ramifications of the four curtain walls were pointed out. The Beauchamp tower, the lower story of the Bell tower, and a curious arcade extending the whole length of the west curtain wall were inspected, this arcade being a most curious and puzzling affair. It occurs beneath the curtain wall, which rises to a height of 37 feet above the vaulting of its roof; it is constructed of brickwork with stone quoins, and has loopholes looking outwards to the ditch. The style is like that of the Tudor age, against which date the brickwork, however, seems to militate, and yet it is not likely that architects of the time of Henry VIII. would have dared to have tampered with so tall a wall, twelve feet in thickness; it would appear further that such an alteration would not have been suitable to the requirements of any later period. This parade was the place of execution of royal personages. After the Bowyer tower, St. Martin's tower, the Brass mount, the Broad Arrow tower, in which the various prisoners' inscriptions caused some little inquisitive delay to the general progress of the party, the central keep or "White tower" was gained. Here the inspection was made from the basement, the vaults, with Guy Fawkes' dungeon—then each successive stage being gone through to the fine Norman chapel, recently restored under the direction by Mr. Salwyn, which consists of a fine series of round arches on plain pillars, over which is an arched gallery, the whole surmounted by a rubble work roof, remarkable for its plain vaulting without ribs. The chapel is dedicated to St. John the Baptist. Its architecture is very plain, there being a total absence of zig-zag or chevron ornamentation, while the cushion capital, so favoured by Gundolph, prevails. The Norman star and the cross often appear on the abacus of various columns. In this ancient chapel, where the Conqueror paid such devotions as he was capable of, Mr. Clark gave an able discourse upon the architectural history of the tower and the historical events with which its rise as a fortress was associated.

Lord De Ros made some important observations on the murder of the princes, confirmatory of the popular belief in their having been murdered in the Bloody tower and buried at the foot of the stair leading from the Royal palace to this chapel.

In the evening a grand *soirée* was given at the Architects' Institute, by the president, Mr. Beresford Hope, M.P.

FIFTH DAY.

On Saturday the members of the Congress paid a visit to Windsor and Eton. The duty of conducting them over the Castle, and elucidating its many historical associations and points of archæological interest, devolved upon Mr. Parker, of whose paper, delivered on Friday, we give a very brief *resumé* :—

Windsor Castle stands on an outlying promontory of chalk commanding the winding shores of that part of the Thames, with a rich valley, which seems to have pointed it out as a natural position for a fortress

in primitive times, when the natives wished to protect their country against invasion. The wide and deep entrenchments and the high artificial mounds indicate an early date. There were also roads at the bottom of the fosses, with a wide bank between them, on which buildings were erected, first of wood and afterwards of stone.

Edward the Confessor is believed to have resided chiefly at Old Windsor, and to have retained the castle for use in case of need. In the time of Henry II. the first mention of the castle is made in the Pipe rolls. In the reigns of Richard I. and John only necessary repairs were made.

With Henry III. the history of the existing castle may be said to begin. The whole of the lower ward was then first built of stone, and many portions of the existing walls are found to be of that period. The Clewer tower—now known as the Curfew tower—remains almost unaltered, and exhibits in good condition a prison of that period.

On the primitive chapel the north wall is still preserved, the galilee being now the east end (behind the altar) of St. George's chapel. The doorways of the galilee are one of Henry III., the other of Edward III.; the west end of the chapel has been rebuilt several times. The arcade in the cloisters was protected by a wooden roof only. This chapel was completed by Edward III., and made into a lady chapel, when the great St. George's chapel was built. It was partly rebuilt by Henry VII. for the tomb of Lady Margaret, his mother, and afterwards was proposed for that of Henry VIII. It was much altered by James II., and partly restored by George IV. At the present time it is being made the object of most devoted care, under the direction of Mr. Gilbert Scott.

In the reign of Edward II. there were considerable sums expended on repairs of the walls, towers, and bridges, chiefly for timber and carpenters' work.

The reign of Edward III. is one of the most important in respect to the history of Windsor, a large part of the existing castle having been built at that period. The extent or survey of the castle in the first year of this reign is a very minute and important document, lately brought to light. Another equally important document is the builder's account for the Round Tower, which was entirely built from the ground in the 18th year of this reign, and still remains, though much altered in appearance from the additional storey superposed by Mr. Wyattville under George IV.

The building is sometimes called the Round Tower and sometimes the Round Table; and from other peculiarities in the same accounts it is evident that the tower was built to hold the table. The galleries in which this round table was placed are still remaining, and the general disposition of the apartment where the knights dined on St. George's Day is well seen from the summit of the Round Tower. The tables of those days were seldom more than a few planks in width, and the guests sat round on one side, the other being open for the service of the attendants. The centre of this great round table, then, was designed for the latter purpose, and was open to the air, a passage communicating on a level from this central space to the kitchen on the top of the middle gate, which has thus acquired the title of the "Kitchen Tower." The tower and table were erected within a year and ten days, the greatest haste being made in order that the new order of knights might dine at it on St. George's Day following its conception.

There are two vaults in the small tower at the south-west angle of the royal apartments near the library, now called erroneously King John's tower. It is a small octagonal building, and the two chambers in it have very good vaults, with the ribs meeting in a central boss, which is in both cases carved into the form of a rose. This enables this rose tower and the rose vaults to be identified in a very remarkable manner.

The works which had been carried on during a great part of the long reign of Edward III. were not completed at the time of his death, and were continued under Richard II.

The celebrated Geoffrey Chaucer, "the father of English poetry," was appointed, in the fourteenth year of this reign, clerk of the works, but very little was done in his time. Further than this Mr. Parker did not bring down the history in his discourse, although in conducting over the castle and grounds he incidentally pointed out all the various dates of architecture and the circumstances under which additions and alterations had been made up to the present time. The state apartments were also thrown open and collections of valuable and interesting objects displayed. St. George's Chapel was, of course, the climax of attraction, as however often seen it will always be.

The thanks of the Congress were carried with acclamations for her Majesty's gracious favours, and will be conveyed officially by the president and council of the institute. Thanks were also given to the dean.

After Windsor was Eton, under Professor Willis,

a most enjoyable perambulation. Having given the main points of its architecture and history in our notice of the Friday discourses, we need not in this place do more than add that the professor fully maintained his enviable reputation for facile and eloquent leadership, and his pre-eminent ability, as Mr. Beresford Hope well expressed it in tendering him the thanks of his audience, of making "the dark places of the earth clear to the intellect and the eye."

SIXTH DAY.

Monday's proceedings were again of a very interesting character.

The first paper in the historical section at the Royal Institution, was one on the legal history of Westminster Hall by the veteran Mr. Foss. As this famous building will shortly cease to be the theatre of our civil judicature a short notice of the uses to which it has been hitherto applied were very appropriate. In it, besides the Royal ceremonies and festivities, were held those audiences at which differences between subject and subject were heard before the king himself and the barons and prelates of the realm. Henry II. attended personally in it, and is said to have made frequent progresses to discover the abuses in the rural jurisdiction. Three hundred years later there is evidence that King Edward IV. sat in the King's Bench. James I. was the last instance on record. At the time of the Conquest and long after, there were three special periods at which the kings held their courts, or, as it was called, "were their crows, with extraordinary solemnity, not only for the consideration of national affairs, but also for the transaction of legal business. These were at Christmas, Easter, and Whitsuntide, answering to our present law terms of Hilary, Easter, and Trinity, Michaelmas Term having been added at a subsequent period. In all their details and sequences Mr. Foss traced the institution of our law courts and the judges presiding over them down to the present epoch.

Mr. Cyril Graham's paper, "On the Recent Researches in Palestine," founded on Captain Wilson's report of the first expedition, followed. In it the author gave a lucid account of the objects of the Palestine explorations and the discoveries already made.

The Dean of Westminster presided; and speeches discussing the subjects introduced into Mr. Graham's discourse, with appeals for subscriptions for the Palestine Exploration Fund, were made by Mr. Layard, Colonel Frazer, Mr. Beresford Hope, and Professor Porter. Photographs (160 in number) and detailed maps of the Lake of Galilee and other portions of the Holy Land, made by the ordnance surveyors under Capt. Wilson, were closely inspected by large crowds of the members and ladies.

A short but able paper, "Some Account of the Contents of the Public Record Office," was next read by Mr. Burtt. The history of the different branches of that establishment, and the accidents to which its contents had been subjected, necessarily afforded much special information.

The advantages which have accrued to archaeological pursuits by the improved condition of the public records every one will cheerfully admit, and recent most valuable works and new editions of recognized books have proved the importance of bringing documentary evidence to bear in a comprehensive scale upon history, biography, and topography.

The excursions commenced with the Palace of Lambeth, where Mr. Scharf discoursed on the paintings, especially pointing out a valuable original of Archbishop Warren, which had lately been recovered from a state of dust and lumber. The Temple Church and the hall of the Inner Temple were the next points of attraction; and after those the gem of yesterday's perambulations, St. Mary, Overy, the exquisite architecture of the choir of which caused a strong feeling of indignation in the breast of every one present against the Vandalism which destroyed the noble nave in 1831, and erected the present abomination in its place. The style is pure Early English, and the edifice should be spoken of rather as a minster of the second class than as a church. The reredos—or rather stone altar screen—is finely sculptured; its erection was due to Bishop Fox, of Winchester, in 1528. The most remarkable monument is that of Gower, the poet, whose effigy lies recumbent in the transept wall, with his head resting on a pile of three books—"The Vox Clamantes," "The Speculum Meditantes, and "The Confessio Amantes."

SEVENTH DAY.

On Tuesday, at a meeting of the section of Primæval Antiquities, Mr. G. Deutsch read a paper "On Semitic Palæography and Epigraphy." The lecturer traced back the formation of our modern handwriting through the Etruscan, Hellenic, and Italic stages, to the rude scrawls of the Phœnician hœnecutters. He gave a brief outline of the ancient and modern history

of the art and religion of the Phœnicians as the chief representatives of Semitism in early times, and continued to say that there was no more difficulty in understanding Phœnician writing than in deciphering Greek or Roman inscriptions. He next gave a short account of Phœnician studies in Europe, and also a description of the monuments recently found on the soil of Phœnician colonies, chiefly votive tables discovered in Carthage, and the trilingual inscription of Sardinia, which, though brief, would be of the greatest importance for the purposes of comparative hierology, numismatics and linguistics in general. He concluded by saying that the science of palæography supplied the greatest link in the chain, which would, he trusted hereafter draw all humanity into one great and solid union.

Mr. N. Whitley also read a paper on "The Flint-flakes found in Devon and Cornwall."

The Congress then made an excursion to Hampton Court, whither the visitors were conveyed by an excursion train, which left Waterloo Station at 12 o'clock. On arriving at the Palace, Mr. J. H. Parker proceeded to give a lecture on the architectural details of the structure. He said it was a capital specimen of the Early English style, in which, contrary to modern tendency, everything was made subservient to convenience. The mediæval house and the mediæval college were in no wise different in construction, and, whenever a new collegiate building was now instituted the mediæval style was adopted for its erection. Mr. George Scharf also gave a discourse on the tapestry and pictures of the Palace, and in the course of his address traced the history and vicissitudes of the Royal property of the Kings of England. Speaking of the tapestry, the lecturer said that it had been long neglected before it had been brought to its present situation. The brilliancy of the gold and silver thread, which had been extensively employed in working the designs, had faded to a great extent. It was a remarkable fact, however, with regard to tapestry, that, though its colours had declined in lustre from exposure to damp or being kept in dark places, yet on being brought into strong light again the brilliancy of the texture revived. Alluding to the pictures, Mr. Scharf observed that what were commonly called the Hampton Court Beauties, painted by Kneller, were erroneously so termed; the real Hampton Court Beauties were the pictures painted by Lely, while the portraits executed by Kneller were likenesses of the famous women of the Court at Windsor.

After leaving Hampton Court the party proceeded by train to Putney, and thence to Fulham Palace, where they were received on the grounds by the Bishop of London and Mrs. Tait. The visitors were then conducted through the various apartments of the palace, when the bishop gave some account of the history of the building, which, he said, belonged to the Bishops of London since the seventh century. He also described the pictures in the various rooms, one of which is of especial interest, as being the only portrait now extant of the famous Bishop Ridley. The party returned to town about seven o'clock.

On Wednesday the concluding meeting of the Congress was held at the Guildhall, the Marquis of Camden in the chair, when it was announced that Hull had been selected as the place of gathering for next year. Votes of thanks were given to the Lord Mayor, and to those various institutions and individuals who had afforded facilities during the sittings and excursions.—*Building News.*

NATIONAL GALLERY OF IRELAND.

ON several occasions, since the establishment of this institution, we have pointed out its vast importance, not only as a school of art instruction, but a place wherein the public taste may be refined and properly directed, and where the people could be educated to form a just estimate of the dignity to which genius in art had risen in times gone by. Since its formation the institution has been gradually but steadily progressing, and scarcely a month passes over without some valuable addition being made to the pictures that adorn the walls. Amongst the original paintings there are many in the collection possessing transcendent merit, and without a single exception the copies of the most famous pictures of the great masters are worthy of the warmest praise, and the positions which they occupy. The institution is a young one, and requires not only the fostering care of the Government, but the active and practical aid of the lovers of art who possess the means of extending the knowledge of it to others. It will be remembered that by the civil service estimates for this year a sum of £1,000 has been voted for purchase of pictures, but "to be issued only when private contributions have been received to an equal amount." As the principle of public grants to the gallery equivalent to local subscriptions is thus admitted and established, and, as we find by the list of subscribers printed in the preface to the catalogue of the gallery, that a sum

of £6,000 has been already so obtained, we presume that an equal amount (of which this year's £1,000 may be regarded as a first instalment) will be made good by future annual grants; but in addition to this benefit a very important stimulus will, doubtless, also be given to the contribution of further private donations, and by some such means as the application of the future. When we consider what has been so far done with very limited means, and find that the very interesting and important works obtained by purchase have not cost more than £10,000, while for one picture recently added to the London National Gallery—a small, but, no doubt, most valuable work—a sum of £9,000 was paid, we look confidently forward to seeing the National Gallery of Ireland, by means of more liberal contributions, gradually acquiring a still richer treasury of works of art, and assuming its true importance as an educational institution and a source of pleasurable and refined enjoyment to the people of Ireland, and to the annually increasing numbers of visitors from the sister and foreign countries. The institution is much indebted to Mr. George Mulvany for the active exertions he has made in procuring good pictures at a cheap price for the National Gallery which is every day becoming more and more worthy of the name it bears. The pictures recently purchased in London and on the Continent add materially to the interest and value of the collection, and after having closely inspected them, and heard the prices paid for them, we had no hesitation in coming to the conclusion that Mr. Mulvany had ably discharged the important trust confided to him. It must be borne in mind that the funds at the disposal of the directors are very limited, and that their purchases of pictures must keep pace with the means at their disposal, but, notwithstanding, it will be seen by the following list of the pictures that have been bought, and of those that have been presented since January last, that the National Gallery is likely to realize the most sanguine hopes of its proprietors:—Vandyck—Portrait, head, life size, from Northwick collection. Altdorfer—Portrait of the court of Moulfort and Roeterfels. Ridolfo Ghirlandajo—Virgin, infant Christ, and St. John in a landscape; St. Joseph in the background, from Count Choiseul's collection. Dirk Von Harlam—St. Luke sketching the Virgin. Tintoretto—Portrait of a nobleman, dated 1553. Vander Helst—Head of an old woman, signed and dated 1647. Snyder—Boar's head, a study; both from the collection of Wm. Brocas, Esq., R.H.A. Moroni—Portraits, half length group of a man with his two children. Bellini School—Virgin and Christ enthroned, angels adoring. Hans Asper, of Zurich—Portrait of Margaret Knoblauchin, dated 1532, from the collection of the late H. Farrer, Esq., of London (distinguished connoisseur and dealer). Vander Neer—Town on fire—*idem—idem*. Egton Vander Neer—A gentleman with a greyhound—*idem*. Murillo—Portrait of Josua Van Belle, signed and dated 1670, as painted in Seville, on the back of the original canvas; original drawings purchased at the sale of the collection of the late Rev. Dr. Wellesley, of Oxford, in London. Correggio—Apollo, a drawing in red chalk; Cupid seated, fondling an eagle, in red chalk. Lorenzo di Credi—Head of a young female, nearly life size, circle, pen and sepia. A. Durer—A rabbit highly finished in bistre, signed to the left, "Durer, Nuremberg." Elzheimer—Landscape, evening effect, a highly finished drawing in coloured chalk, washed. Andrea Mantegna—Part of the triumph of Julius Cæsar, soldiers carrying trophies in procession, pen and sepia, highly finished. Pollajuola—Profile head, life size, in chalk, cut out and laid down; on the reverse is a study of feet and signature. Titian—A landscape, with trees and buildings, sun rising behind distant mountains; to the right, on a rising ground is Magdalen praying. Leonardo da Vinci—Portrait of Ludovico Spozza, called the Moor, a highly finished drawing, life size, in black chalk, washed. Guadenzi di Ferrara—Virgin seated, infant Saviour standing on her lap, angels on each side playing on musical instruments, in pen and bistre, heightened with chalk. Raphael—An Apostle, in pen. Presentations—By Charles Bianconi, Esq., D.L.—Christ with his disciples at Emmaus. Thomas S. Berry, LL.D.—Mortuary Chapel, by Herman Dyck. Antonio Brady, Esq.—Portrait of Sir John Sinclair, attributed to Gainsborough. Alexander Thom, Esq.—Glen Ida, by Charles Grey, R.H.A. Viscount Southwell—Cartoon, loyal peasants of Hamsbach, capturing rebel prisoners, by F. Pilotz, junior. Bequeathed by Thos. Hutton, Esq., D.L.—Lady Elizabeth Woodville invited by Edward IV. to visit him in his tent, by Vandyck. Portrait—School of Titian. Original drawings presented by F. D. Burton, Esq., R.H.A. Studies of two male figures, made in red chalk, heightened with white, by F. Primaticcio, from the Lawrence Collection. St. Elizabeth, the Virgin, Saint Joseph, and other figures; sepia,

pen outline, by Andria Del Sarto, from the Lawrence Collection. Study of a female kneeling, in red chalk, heightened with white, by F. Primaticcio, from the Lawrence Collection. Studies of drapery, red chalk, heightened with white, by F. Primaticcio, from the Lawrence Collection. The foregoing list will show that those to whom the direction and control of the gallery has been confided have been actively and efficiently discharging their duties, and that a number of generous donors have shown an example which others should follow. It would require much more space than we have at our disposal to give anything even in the shape of a descriptive outline of the pictures recently purchased or presented to the gallery, but we must observe that they are great acquisitions, and cannot fail to be appreciated by those who have given art matters any serious thought or consideration worth speaking of. When sufficient means can be obtained the western half of the building now partitioned off will be thrown into the gallery, and applied to the legitimate uses for which it was originally intended, and before many years have passed over we have every reason to believe that the National Gallery will be an honour to the country, and become a great refiner and instructor of the people.

THE O'CONNELL MONUMENT.

THE Committee held a meeting on Wednesday last, which was numerously attended. Mr. Michael Murphy, T.C., in the chair. After reading minutes of former meeting, Mr. Crean (hon. sec.) said the present meeting was called for the purpose of adopting or rejecting the report of the sub-committee, which did not recommend the adoption of any one of the three designs for the O'Connell Monument sent in by architects, but directed attention to two of them, one from Mr. Butler, the other from Mr. Boulger, as possessing merit worthy of consideration. Since the last meeting Mr. Butler had, at the suggestion of some members, taken away his design to amend it. As the design had not yet been returned, he (Mr. Crean) did not see what business could be done that day. He suggested, therefore, an adjournment for a fortnight.

Mr. Keegan said neither the sub-committee nor the general committee had authorized Mr. Butler to remove his design, and be conceived that such a step was irregular and informal.

Mr. James Whelan, T.C., said the Rev. Mr. O'Sullivan, who possessed much more artistic taste than many who made themselves more prominent, was struck by Mr. Butler's design, and suggested certain improvements in it of an important character.

Mr. Keegan submitted that the meeting should proceed to do the business for which they were summoned. He did not think that individual members of the committee should impede the action of the committee by making suggestions to one particular architect to improve his design. That course was unfair to the others.

Mr. Thomas Ryan said he would move that the design before them (Mr. Boulger's) should be adopted.

Mr. Crean said that could not be done. The report alone could be received or rejected.

Mr. Hughes—The report merely recommends us to take two of the designs into consideration. It does not ask the committee to select any one of the three sent in.

The report of sub-committee was then unanimously adopted.

Mr. Ryan said he would now give notice of a motion that that day week he would move the adoption of one of the designs before the committee.

Mr. Tracy said a meeting to select a design would be the most important yet held. A matter of such magnitude was not to be lightly or rashly dealt with, and he suggested that Mr. Ryan should name that day fortnight for the meeting.

Mr. Crean said that it would be desirable to have as full a meeting as possible to deal with the question, and the shortest notice that could be given would be a fortnight.

The Chairman—According to Mr. Ryan's notice, the next meeting will have to consider whether they will accept for the O'Connell Monument the design of Mr. Butler or the design of Mr. Boulger, which was in fact Mr. Cahill's.

Mr. Ryan read his notice of motion—"Resolved—That on the 22nd of August we select one of the two designs now before us for adoption for the O'Connell Monument, and that this committee at its rising do adjourn to the 22nd inst."

Mr. Dennehy, T.C., thought the selection of the design ought to be left to the sub-committee. He conceived, too, that the notice of Mr. Ryan contained a misstatement. It alluded to two designs as being here before them, whereas there was but one, Mr. Butler having taken away his design.

Mr. Tracy said the two designs would be before the next meeting.

Mr. Dennehy said that there were really only two designs before the committee at present, the third having been sent back to the architect for alteration.

Mr. Ryan—Not by order of the committee. Mr. Gorman suggested that Mr. Butler's original design *without improvement* should be placed before them that day fortnight.

Gratuities of £3 each were voted to the porters of the City Hall, for caring the designs and models sent in for competition.

Orders for payment of £20 each to Messrs. Butler and Madden were signed by the chairman, and also for payment of a few small accounts.

[May we venture to express a hope that in our next issue we shall have to announce the final settlement of this competition; we are happy to record the fact that a more conciliatory spirit predominates at the meetings of committee recently held, than at those of last year, at some of which not only the weapons of Billingsgate, but also those of the P.R., were called into requisition. We may remark, in closing, that Mr. Boulger's design appears to be the favorite.]

LONDON AND DUBLIN BAKEHOUSES.

A RECENT number of the *Builder*, in noticing Mr. Tremereheer's report on the operation of the "Bakehouses Regulation Act," says:—"It may be remembered that the Act is only permissive, and merely declares 'that it shall be the duty' of the local authorities to enforce, within their district, the provisions of the Act. It imposes no penalty for the neglect of that duty, but it empowers any officer of health, inspector of nuisances, or other officer appointed by the local authority to enter any bakehouse at all times during the hours of baking, and imposes a penalty on any person who refuses admission to the inspector."

The district of Islington, London, contains a population of 185,000. When the bakehouses in it were last inspected in August, 1864, 72 "were found to be in a dirty, some in a very dirty, state. In one, besides an accumulation of rubbish, a horse was kept in the bakehouse. In fifty-one the paving was broken, or in bad condition. In one, a defective drain ran beneath the bakehouse, at the spot where the man stood to work at the trough, and the soil rose between the stones as they were stepped upon. In three the floor was undermined by rats, a pretty sure indication of foul effluvia. In one the walls were damp from a neighbouring defective drain. In three a privy was on the same level with, and close to, the bakehouse, and in three others the privy was positively within the bakehouse itself. In one of these there was neither pan nor trap, the privy consisting of a bar of wood over an opening in the drain. We need not go any further; the idea of human food being prepared in such places is sickening enough."

Out of the 20 English provincial towns to which the circular was sent four only forwarded replies, which all appear satisfactory.

"Scotland sends reports from eleven towns, and in seven the Act has been enforced with good effects. The Edinburgh report brings to light a very disgusting practice in the 'Modern Athens,' Of the 200 bakehouses which it contains, seventy-nine have privies in them. In the four remaining towns no steps had been taken for inspection."

"In Ireland the results are very unsatisfactory. Of the twenty large towns to which the circular was addressed, seven only returned an answer; and of these Dublin is the only town which has done anything in the matter. Under the zealous inspection of Dr. Mapother, who, besides being thoroughly master of his subject, seems to possess a genuine liking for what is really a thankless and uninviting work, the Dublin bakehouses have been brought into a very satisfactory state. The absence of returns from other towns is to be accounted for by the want of a system of sanitary legislation for Ireland similar to that which exists for this country."

THE DUBLIN EXHIBITION PALACE COMPANY.

At the half-yearly meeting of the company on the 6th inst. (B. L. Guinness, Esq., D.L., M.P., in the chair) the secretary read a lengthened report of their proceedings since last meeting, from which we can find room but for a few extracts:—

"Since the last general meeting of the shareholders, the directors have been chiefly engaged in completing the Palace and Winter Garden buildings, and in developing the objects and purposes for which this company was originally formed."

"The temporary buildings which had been erected for the use of the late International Exhibition have all been removed; and the front of the Exhibition Palace, with its fine Esplanade, has been since completed in accordance with the architect's design (with the exception of the three statues for the pediments, by W. Geefs, of Brussels, which are now in

Dublin, and about to be erected) and will present an attractive feature in this part of the city. In the large concert room the spacious galleries have been erected, the orchestra finished, and the room decorated, and it is now deservedly ranked by musical artists among the finest concert halls in the United Kingdom. An ingenious arrangement has been effected by which this concert hall can be used (when desired) in connection with the Winter Garden Promenade, and which has added materially to the enjoyment and success of the popular concerts lately held in that building."

"Considerable progress has been made in the decoration of the Winter Garden. It is impossible to furnish a space of such great extent with full grown plants in the first instance. Some time must elapse before the plants will produce their full effect. Meanwhile we must be content to watch their growth and progress; yet, even at the present, they possess no inconsiderable attraction, and that of a daily increasing character. The directors cannot avoid noticing the readiness with which their applications for contributions of plants have been complied with, in particular from the gardens of the late Lord Lieutenant, Chief Secretary, and Lord Chancellor, the Duke of Leinster, and Mr. Usher, of Leopardstown. They have also received some very valuable plants from the gardens of Trinity College. It is hoped that many similar donations will hereafter be made, and particularly of plants which, having outgrown the limits of ordinary conservatories, will here find ample space for their development. So far as the directors know, no other building in which plants are cultivated has hitherto been lighted with gas upon a scale at all to be compared with the Winter Garden, and therefore some anxiety was felt as to the effect which gas lighting would have upon the health of the plants. The directors are, however, happy to state, that by keeping the light as high as practicable above the plants, and by a judicious ventilation, they have, so far, remained perfectly uninjured, and the ferns and semi-tropical plants, upon which the attraction of this building so much depends, have in particular thriven admirably."

"In the Open Gardens much progress has been made, and the directors with confidence point to them as a very successful effort to produce a display of flowers in the midst of a large city. The citizens of Dublin will find in these gardens an attractive promenade, where at all times they may enjoy, almost at their doors, the pleasure of a well-furnished and carefully-tended flower garden. A nursery for the propagation and growth of plants has been formed at the western side of these grounds, where very many of the flowering plants which have decorated these grounds and the winter garden have been raised, and the serious expense of purchasing plants for this purpose has been considerably lessened."

"Reading rooms (free to season-ticket holders) have been established, which are supplied with newspapers, magazines, and periodicals, and which are open to the public at a small charge, and form to many an additional attraction to the Palace. The board have endeavoured to meet the public wishes and taste by providing music and other attractions of a high character. The large numbers which have assembled in your concert-halls and gardens, and the revenue which has been received, afford the best evidence that the public appreciate and will support an institution so conducted. The directors are at present engaged in the organization of a "chorus," somewhat after the model of the Sacred Harmonic Society in London, and they hope to be thus enabled to produce the works of the Great Masters in a creditable manner, while at the same time encouraging the improvement of musical taste in Dublin."

"The accounts of the Dublin International Exhibition have been closed since the last general meeting and show a profit of £8,074 ss. 5d. Of this sum £3,230 15s. 6d. was expended upon works and assets handed over to this company, and £2,855 14s. has been applied or allocated for payment of the dividend declared at the last meeting."

"The maintenance of a proper temperature during the winter season in the Exhibition Palace and Winter Garden promenade is manifestly a matter of the first importance, and has engaged the attention of the directors, who are in communication with experienced parties for the erection of a large heating apparatus, on the most improved principle. These works will be completed before the winter season, so that not only the concert room, but the Winter Garden promenade will be made comfortable for the public, even during the most inclement weather."

"In conclusion, the directors have pleasure in stating that from the experience of the last few months, there is every reason to expect that under careful management this company will realize an annual income not only sufficient to defray the interest on the additional capital required, and other necessary expenditure, but which will leave a liberal balance available for future dividends."

THE ATLANTIC CABLE.

ENGLAND to AMERICA.

I bid thee hail! dear Jonathan,
Thou younger brother mine,
And drop, as erst I promised thee,
A true and friendly line;
And with it send a fervent wish,
That Britain long may be
In league with thee for truth and right,
And holy liberty.

The quarrels in thy family,
Thank God, are now pass'd o'er,
And men once slaves to fellow-men
Shall be thus slaves no more;
And I with thee will ever strive
To keep this flag unfurld—
"Commerce and peace between the States,
And freedom for the world!"

O, may there never, never flash
Along these magic lines,
The words that dash a nation's hope
With lurid war's dread signs;
But as the pow'r of science binds
Our lands so close with thine,
So may our hearts, friend Jonathan,
In peace for aye entwine.

—Athenæum.

GEORGE SMITH.

The Archæological Institute will henceforth, by direct permission of her Majesty, be styled The Royal Archæological Institute of Great Britain and Ireland. The obtaining of this privilege was the last official act of the late President, the Marquis Camden.

CORRESPONDENCE

SANITARY PRECAUTIONS.

THE following letter has already appeared in the morning journals; we have been requested by the author to give it a place in our columns, as it touches on subjects which we have always taken an interest—the cleanliness and health of our city:—

TO THE EDITOR OF THE DUBLIN BUILDER.

SIR,—There has been a considerable amount of correspondence recently touching on the sanitary state of the city. Anonymous writers have been profuse in their comments. No doubt there may be a justification of some of the strictures, but how are they to be obviated or abated? The state of the streets forms a fertile subject on which to animadvert. The Corporation, its officers and contractors are made the targets for the amusement of those philantropic unknowns. I guess these would-be enthusiastic preservers of health contribute very sparingly to the borough rate, yet their anxiety manifests itself by commenting on matters beyond the reach of their knowledge, or, if in their possession, ingeniously suppressed. Sanitary measures are indispensable for the preservation of health, and for this purpose the Corporation have wisely provided a staff of sanitary officers for a particular department, and have, at the same time, contracted for the cleansing of the streets so as to carry into effect wholesome sanitary measures. Respecting the performance of the latter, a specification of contract definitely fixes the obligations to be discharged, and these conditions being effected the responsibility of the contractor ceases. For instance, there are streets and lanes specifically noted to be swept daily, others bi-weekly, others tri-weekly, and some weekly. The daily ones are by far the most important, as by reason of the bad accommodation provided in the houses, all domestic and other offal must find egress into the street or lane in front, and every passer-by must experience the trying effect of such deposits on the smelling senses. Any person reflecting on this circumstance will readily see the difficulty of keeping this class of streets in "apple-pie order," as, no sooner has the street been swept and the soil removed than fresh debris are exhibited to the public gaze, and there must remain till the ensuing day before being removed. The landlords, it would appear, in building such habitations overlooked altogether the existence of animal secretions, and yet the Corporation officers and contractor are castigated and catechised by anonymous writers for permitting such matter to exist. Every street within the city of Dublin specified to be cleansed a particular number of times per week must be done, and to see that this obligation is carried into effect the Corporation have appointed an ample staff of inspectors for the purpose, and even these supervisors will admit that many places are kept in a state of cleanliness in excess of the obligations of the contractor. It is, of course, an utter fallacy to suppose that in so large a city every individual fault-finder or otherwise could be in possession of the actual number of times particular streets are to be swept per week, and even if swept in excess, sudden vicissitudes of weather or breakages in the street, or the execution of other works, will sometimes render the surface of many of them anything but inviting to travel over. It must be admitted, however, that vast progress has been gained in the state of the streets and the mode of executing the work as contrasted with the *modus operandi* resorted to in years gone by, when the labour was executed by females, with the aid of besoms and the liquid mud conveyed away in antiquated wooden carts. If the state of Dublin is at present defective, how much more so must be the state of London, as described by the editorial pen of the *Daily Telegraph* of the 4th inst., which I beg to append:—"The condition of Whitechapel in the east, and of Lambeth and Vauxhall in the south and west of London, is a disgrace to the metropolis. The passengers from Waterloo Station in the hot months, as they pass along the line to Vauxhall, are frequently assailed by pestiferous, disgusting stenches, which compel them suddenly to close the carriage windows. The sickening effluvia proceed from bone-boilers works and enormous potteries—the horrid combination of the gases of decomposed animal matter, and the smoke and chemical emanations produce nausea and headache even in the railway passenger who is speedily carried into a purer atmosphere." What must be the condition of the permanent inhabitants of this stricken district? Day and night compelled to inhale the polluted atmosphere, they are continually swallowing a subtle poison, which inevitably shortens their lives, or renders them the first victims of an epidemic.

P. O'BRIEN.

L A W.

OVERLOADING A STORE.

McCracken v. Sinclairs.—This case, of which we give some particulars below, was tried at the recent assizes for Co. Antrim. Plaintiff sought damages from defendants for overloading a store, in consequence of which a portion of the flooring and its contents fell into a bonded store beneath, and destroyed several casks of whiskey. From the evidence for plaintiff it appeared that, on the 7th of February last, defendants entered into possession of a certain loft or store in Canal-street, Newry, belonging to plaintiff. The loft was 90 ft. by 18 ft., and divided by a partition wall into two apartments—one 20 ft. and the other about 69 ft. long. Plaintiff alleged that he gave possession of both rooms to defendants. On the 7th March defendants' servants were engaged in filling the store with Indian corn, and whilst so engaged, the one end of the flooring—about 30 ft. in length—fell under the weight of grain which had been heaped upon it, to a bonded store underneath. The case for plaintiff was that, in a conversation with Mr. Sinclair, jun., he stated that in the whole store he had on one occasion kept eighty tons of seed, and in reply to an observation of Mr. Sinclair that it should hold 100 tons, he (plaintiff) said it might do so. He alleged that, even admitting that there were only fifty-four tons on the loft at the time of the accident, as stated by defendants, it was too great a weight to have heaped on one end of the floor, which was not able to support it, and that it was in consequence of the careless overloading of the store that the accident occurred. Three large beams, which, it was contended, were of good memel timber, were broken in the centre. The whole material, as already stated, fell into the bonded store underneath, breaking several casks of whiskey, a great quantity of which was lost. Plaintiff was obliged to make compensation for the loss of their whiskey to several dealers in the town, who, however, only charged him first cost. The money paid by him in this way amounted to £67 9s. 11d.; and the money expended by him in restoring the flooring, after using all the old material that could be made available, was £31 11s. 8d., making a total of £99 1s. 7d. The beams and joists of the floor were, plaintiff contended, in a sound condition, although about an inch deep in each of the ends of the beams which were fixed in the wall was a little decomposed by the damp, but this, it was proved, could not have been the cause of the floor giving way. For the defence it was urged that the Messrs. Sinclair had only got possession of the larger apartment, 69 ft. by 18 ft., and that Mr. McCracken had engaged the floor to carry 100 tons, which it was stated the plaintiff had said he had frequently put upon it. Mr. Sinclair, jun., at the time of the engagement, pointed out to the plaintiff slabs on the floor of the bonded store where he thought pillars to support the beams above had previously rested, and he stated that it would be better to have upright posts erected. It was averred that plaintiff then stated in reply that he had had on some occasions 100 tons on the loft, and that it was able to bear that weight. On that understanding defendants entered into possession of the premises, in which they commenced to store a cargo of damaged Indian corn. The grain, as it reached the store, was "spilled" in a regular manner on the floor with the intention of putting about 100 tons on the one loft which they had rented from plaintiff. The cause of the floor falling was, as alleged, in consequence of the rotten condition of some of the joists, the ends of which were said to be decomposed. This allegation was denied by plaintiff's witnesses. Defendants urged that no blame could be attached to them, as they were in no way accountable for the accident, and they had themselves suffered considerable loss by the damage done to the Indian corn. Several professional witnesses, including Mr. Manning, C.E., for plaintiff, and Messrs. Hastings, C.E., and Barre, C.E., for defendants, were examined, besides a number of other witnesses on both sides. Verdict for plaintiff, with £99 1s. 7d. damages, and 6d. costs.

CHANCERY.

THE SHELBOURNE HOTEL.

Armstrong v. Jury and others.—An application was made to Lord Chancellor Blackburne on the 4th inst., to dissolve an injunction granted *ex parte* by him, restraining the respondents from proceeding with the erection of that portion of the hotel which would affect the light and air enjoyed by petitioner, by a window in flank wall of his house adjoining the premises in question. The case having been called, counsel for respondents stated that after consultation with counsel on other side, they had agreed that, as the case could not be sustained on present affidavits, the injunction should be dissolved. Petitioners, however, should be in no way prejudiced by what had taken place. Respondents might go on building at their peril, and petitioner was not to be considered as

acquiescing in what they were doing. It was a case, counsel thought, that ought properly be tried by a jury; but before November the matter would probably be settled. Counsel for petitioner said that as the injunction not be sustained by the affidavits, there were two courses open to him, either of which he might adopt—either to ask for a postponement for a week for the purpose of filing further affidavits, or of course not to consent but to submit to have the injunction discharged and have the case tried in November before a jury. He had agreed to adopt the latter course, and in the meantime some arrangement might be come to. The Lord Chancellor said it was a case which it was desirable should be arranged in some way before November.

SANITARY.

The Sanitary Committee of the Corporation have stationed men provided with all necessary disinfecting appliances for use in houses wherein cases of cholera have occurred, at their stores in Winetavern-street, Hanover-street East, and North Brunswick-street. Their services are to be available from six a.m. till ten p.m. on request from medical officer or the police. A small charge may be recovered from the owner of the house disinfected.

The Mayor of Cork has, at his own cost, commenced a thorough analysis of the water for drinking purposes in and around the city. The pump at Sunday's Well was chemically examined this week, and the result has proved that the water supplied by it could be no better. The corporation are thinking of closing up the few pumps of the old pipe water committee that are at present in the city, as fears are entertained that a certain amount of the sewage falls into the wells where they are sunk.

At the weekly meeting of the Guardians of the North Dublin Union, a sealed order issued by the Poor Law Commissioners was read, which empowered the board to put in force the provisions of the Nuisances Removal and Diseases Prevention Acts. The commissioners also forwarded the following directions and regulations in exercise of the authority vested in them by those acts:—"All trustees, county surveyors, and others by law entrusted with the care and management of the streets and other public ways and places, shall cause to be frequently and effectually cleansed all streets, rows, lanes, courts, alleys, and passages and public ways, and places under their respective care and management, and shall cause to be removed all filth and nuisances therefrom." The commissioners further specified that the owner or occupier, and the persons having the care and ordering of dwelling-houses or premises where the nuisance or matter injurious to health may be, shall cleanse, whitewash, or otherwise purify, as the case may require, such dwelling-houses or buildings, when and so often as they are in such a filthy and unwholesome condition as to be a nuisance, or injurious to the health of any person; where there is any foul or offensive drain, &c.; where there is any accumulation of matter, or where an animal is kept so as to be a nuisance, or injurious to the health of any person. A resolution was adopted in accordance with the powers vested in the guardians, to serve notices on the occupiers of the premises requiring the abatement of the nuisance. A resolution was also adopted that the dispensary physicians and the relieving officers should be directed to see to the carrying out of the regulations laid down by the commissioners, and to report to the board any cases of nuisance coming under their notice.

From Drogheda we learn that the corporation have commenced sanitary measures in a praiseworthy manner. Besides ordering a large supply of chloride of lime, they have had the public sewers all flushed, and many of the back lanes and alleys thoroughly cleansed.

IRISH BUILDING NEWS.

ESTABLISHED CHURCH.

A new church has been consecrated at Urney, Co. Derry. The site was given by Andrew F. Knox, Esq. The church is in the Early English style, and contains fifty-four open pews, affording nearly four hundred sittings, and was erected at a cost of about £3,000, of which the Ecclesiastical Commissioners contributed £2,000. The church was designed by the architects to the Ecclesiastical Commissioners, and the contract executed by Mr. McGaughey, of Omagh. The old church had a very curious and ancient bell, cast at St. Domingo, and dated 1730; it has been placed in the tower of the new edifice.

ROMAN CATHOLIC CHURCH

The new Roman Catholic Church of St. Malachi, Dundalk, was opened on Sunday, the 5th inst. It is

in the Pointed Gothic style, and forms an attractive feature to the visitor on arriving by the southern entrance to the town. The material is chiefly limestone, from Sheephouse Quarries, Drogheda. The portico and the whole of the façade are finely chiselled. The roof is of open timber work; the pilasters are Galway marble. A moderate quantity of stained glass introduced gives the interior a pleasing effect. The architect was Mr. W. Murray, of Dundalk.

The new organ supplied by Mr. White, of Bishop-street, to St. Peter's, Phibsborough, was opened on Sunday, the 5th inst. It is considered a good sample of native manufacture, combining brilliancy of tone with softness and power. It has three benches of keys, of ivory, and its mechanical arrangements are well turned out. The following are its details:—Great Organ CC to G Alto—Open diapason, gamba, stopped diapason, clarabella flute, harmonic flute, principal, twelfth, fifteenth, sexquialtra, trumpet. Swell Organ, CC to G—Bourdon, open diapason, stopped diapason, octave, mixture, cornopean. Choir Organ CC to G—Gedact, keraulophon, solo flute, piccolo, clarionet. Pedal Organ, CCC to E, 29 notes—Open diapason, 16 feet, pedals to great, pedals to swell, swell to great, great to choir. The case containing the instrument is well finished, painted in imitation of oak; the flutings are gilt. Until the completion of the new church, the organ will remain in its temporary position in the southern transept.

A new oratory is in course of erection at Mount St. Alphonsus' Convent, Limerick, for the Redeemptorist Fathers. Mr. George Goldie, of London, architect; and Mr. Patrick Scanlon, of Limerick, contractor.

A new Roman Catholic Church is to be built at Greystones, Co. Wicklow, from the design of Mr. E. W. O'Kelly, Bray.

GENERAL.

The contract for additions to Friendly Brothers' Club, Sackville-street, has been taken by Messrs. Hall and Son. The additions comprise smoking-room, visitors-room, and new approach to billiard-room at rear, together with W.C's. Mr. W. G. Murray, architect.

The tender of Mr. Henry Quinn for the erection of sheds to accommodate cholera patients at Kimaiuhm auxiliary, has been accepted by the Guardians of the South Dublin Union.

Mr. Robert D. Hutchinson, merchant, has taken the extensive premises, 13, Lower Liffey-street, on which he is erecting a tobacco factory on a large scale, according to the plans and under the directions of Mr. Joseph Maguire, architect, of 6, D'Olier-street. Mr. John Thompson, of Grantham-street is the builder.

Three villa houses have recently been erected on the Temple-road, Upper Rathmines, under the directions of the same architect.

Messrs. John Ryan and Sons, of Limerick, have been declared contractors for the new National Bank house at Charleville, Co. Cork. Mr. W. F. Caldbeck, architect.

Mr. Patrick Scanlon, Limerick, has been declared contractor for building new National Bank at Rathkeale, Co. Limerick. Mr. W. F. Caldbeck, architect.

A new Presbyterian Church is to be built at Armagh, from the design of Mr. John McNea, Belfast.

A new boat-house is to be built, and other additions and alterations made at Ballymacaw Coast-guard station, Co. Waterford.

A new road, with main sewer, &c., is to be made at Clontarf, on the Earl of Howth's property, under the superintendence of Mr. McCurdy.

Mr. McCurdy, architect, is directing the alterations at Knocktopher Abbey, the residence of Sir J. Langrishe, Bart.

Mr. Thomas Ellis has been declared by the Belfast Water Commissioners the contractor for a portion of the Belfast Waterworks. Amount of contract £3,288.

A new flax and tow spinning mill has been erected at Dromlane, near Newry, by Hill Irvine, Esq., J.P.

The directors of the Ulster Banking company have purchased a house in Main-street, Maghera, Co. Derry, from Captain Bruce, where they purpose erecting a banking-house on an extensive scale.

A pair of semi-detached houses on Clyde-road, for Mr. A. H. Robinson. Mr. Armstrong, architect; Mr. George Moyers, builder.

Mr. George Moyers has been declared contractor for dwelling-house at Bray for E. L. Griffin, Esq. Mr. William Fogarty, architect.

Extensive works are in progress at Markree Castle, Co. Sligo, for Col. Cooper, D.L., M.P. Mr. Wardrop of Edinburgh, architect.

Sandry works at Dunboden, Co. Westmeath, for Col. Joshua Cooper, Mr. S. Symes, architect; Mr. George Moyers, builder.

ST. MARY'S BRIDGE, DROGHEDA.

THE contractors for this bridge (Messrs. Brennan and Costello) are pushing on the works in a spirited manner. The northern abutment is already up as far as the springing, and the cofferdam for south side will be complete in a few days. The preparations for building centre pier are also in an advanced state. From what we have seen of the structure so far, we may say that the *modus operandi* of the present contractors will bear favorable contrast with that adopted by former one, whose failure in carrying out the work we noticed in our pages some months ago. In a recent number, the *Limerick Southern Chronicle* referred to the works completed and in progress by the above named firm in the following words:—"The firm of Messrs. Brennan and Costello are now established in this country as first-class builders, in whom every confidence may be placed, and we may fairly refer to the works completed by them in a very short space of time, in our own locality, namely—the bridges of Kilmastulla, Cooly, and Cooleen, which we had the pleasure to notice in this journal on a previous occasion. The drainage works at present carried on by them at Kilmastulla, where about three hundred men are daily employed, at remunerative wages, is rapidly progressing. These eminent builders are now finishing the second contract of the Athboy Drainage, and are giving the utmost satisfaction to all parties concerned."

MISCELLANEOUS.

Mr. B. Seemann, in a letter in the *Athenæum*, describes a huge tree which he measured during his travels in Nicaragua—"I was able to start for Managua, passing Nagarote, where I measured a famous genisaro tree (a Mimosea), of which the villagers are justly proud, and for which 200 dollars have been offered—a high price in a country where timber abounds; and yet they had the public spirit—the rarest of virtues in a Spanish American—to refuse the offer (others say the Government made them refuse). The tree is but 90 feet high; but some of the lower branches, which are quite horizontal, are 92 feet long and 5 feet in diameter. The stem, 4 feet above the base, is 21 feet in circumference; and the crown of the tree describes a circle of 348 feet. A whole regiment of soldiers may seek repose in its dense shade.

The abstract of accounts of the Great Southern and Western Railway Company shew a nett surplus revenue of £92,427 16s. 1d., out of which the directors recommend a dividend of 5 per cent., leaving £4,628 6s. 2d. to be carried to next account. The report states that "There has been an increase of about £2,500 from third-class passengers; but a decrease, to a very nearly similar extent, on first and second class. On military, there has been a decrease of about £900. The tonnage of goods has been larger than at any former period. The cattle trade is, we regret to state, still steadily decreasing, being little more than one-half what it was four years ago; but the loss sustained under this head has been rather more than compensated for by the increased number of sheep and pigs. Up to the present time there is every appearance of an abundant harvest, and we believe that the agricultural and commercial interests of the country have seldom been in a more healthy condition; we cannot, however, expect anything like so large an influx of visitors as we had last year, attracted by the Exhibition, and must calculate on a considerable reduction in the receipts from this source in the coming half-year. The bills for the purchase of the Cork, Youghal, and Queenstown Railway, and for the formation of a junction between that line and the Great Southern and Western; and also the bill for enabling the company to subscribe £13,000 to the Parsonstown and Portumna Bridge Railway, have passed through Parliament, and received the Royal assent."

The rates contemplated for messages by the Atlantic cable, and for the present to be charged, are the same as those in the scale drawn up for last year's cable. From any telegraphic station in the three kingdoms to any station in the United States or Canada, twenty pounds will be charged for a message not exceeding twenty words, or a hundred letters, including address, date, and signature. Every five letters after the first twenty will cost twenty shillings, and all messages in cipher will be charged double those rates—figures in every instance being written as words. Messages from stations on the Continent of Europe will be charged twenty-one pounds for twenty words, and twenty-one shillings per word after the first twenty. Messages from any station in Africa or India will be charged twenty-five pounds for twenty words, and twenty-five shillings per word of five letters after the first twenty. Important messages requiring special accuracy will be charged double, on account of the necessity of repetition.

SHIP-BUILDING IN THE PORT OF DUBLIN.—An iron screw steamer—the seventeenth vessel

built by the firm of Messrs. Walpole, Webb, and Bewley, since its formation about two years and a-half ago—was launched from their yard at the North Wall, on Saturday last. It is for the United Kingdom Screw Collier Company, of this city, and it is gratifying to find that they can have their vessels built and fitted out by native industry, and in so short a time,—the *Dublin* will have been completed within nine months. The dimensions are:—length between perpendiculars, 175 ft., depth of hold, 14 ft., breadth of beam, 28 ft.; tonnage, builders' measurement, 659 96. The engines are by Messrs. Courtney and Stephens. The orders in hands at this yard are equal to its accommodation.

THE DOCK AT HAULBOWLINE, CORK HARBOUR.—Arrangements are being made for the immediate commencement of this work. Buildings and workshops are being fitted up at Haulbowline, and all preliminaries are being arranged. Some workshops have been erected, and in these over sixty convicts are daily employed at the different trades, such as carpentry, smith-work, &c. At present there are about twenty-five skilled mechanics employed for the purpose of instructing the convicts in the various branches of work which may be required. Quarrying stones on the island has been going on extensively, and huge blocks of limestone are daily raised and removed to a place convenient, where they are prepared. Messrs. Perrott and Sons, of Cork, have received the order for supplying tramways and other machinery. About 150 convicts are at present assisting, and every morning they are brought from Spike, and taken back in the evening after their day's toil. Special apartments are being fitted up in the tank building for their accommodation while at meals, and nothing is to be spared to ensure comfort. It is expected the Lords of the Admiralty will visit the works at the latter end of this month, and that they will give directions for the instant prosecution of the undertaking. The docks are to be constructed by convict labour.

OBITUARY.

WE regret to announce the demise during the past week of Hugh Byrne, Esq., City Architect. He succeeded his father, the late Patrick Byrne, R.H.A., in 1864, and has since filled the position (not, we believe, a very remunerative one) It is doubtful whether a successor will be appointed in exactly the same capacity.

TENDERS.

Tenders for Schools and teacher's residence at Monard, near Limerick Junction, for the Right Hon. the Earl of Derby. Mr. W. S. Cox, architect, Limerick.

Joseph McNamara, Dublin	..	£1,660	0	0
Patrick Scanlon, Limerick	..	1,300	0	0
John Ryan and Sons, Limerick	..	1,100	0	0
Gerald Mahony, Cork	..	1,031	12	7
Patrick Barry, Tipperary (accepted)		890	0	0

Tenders for Farm Offices at Islamnare, County Limerick, for E. J. Smith, Esq. Mr. W. S. Cox, architect, Limerick.

William Ryan, Limerick	..	£908	0	0
John Ryan and Sons, Limerick	..	1,330	0	0
Patrick Scanlon, Limerick (accepted)		1,345	0	0

BANKRUPTS.

James Molloy, Clare-street, Limerick, Carpenter.
Robert Tomlinson Carlisle, Sixmilebridge, Co. Clare, railway and public works contractor.

INSOLVENTS.

John Brophy, Phibsborough-road, blacksmith.
Patrick Moore, Newrath House, Waterford, railway contractor.
Patrick Heaphy, Castletownroche, Co. Cork, Stonemason.
Thomas McInerney (of the Kildimo Flag Quarry Company, limited), Doonbeg, Co. Clare.
John Bratton, Carrickaloughran, Co. Armagh, road contractor.

TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

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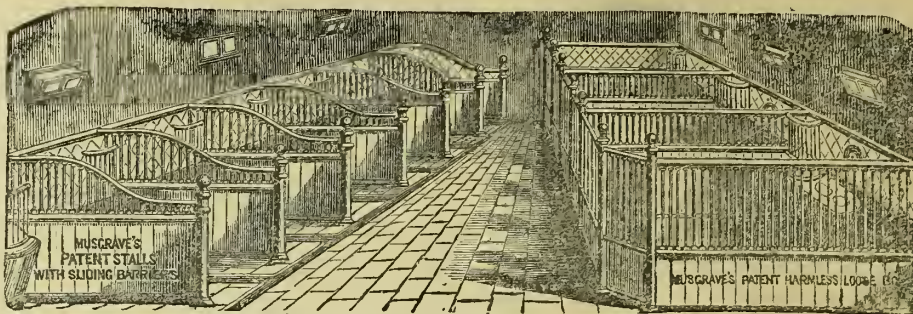
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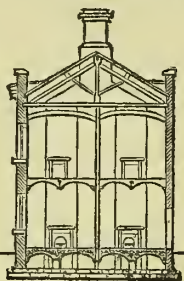
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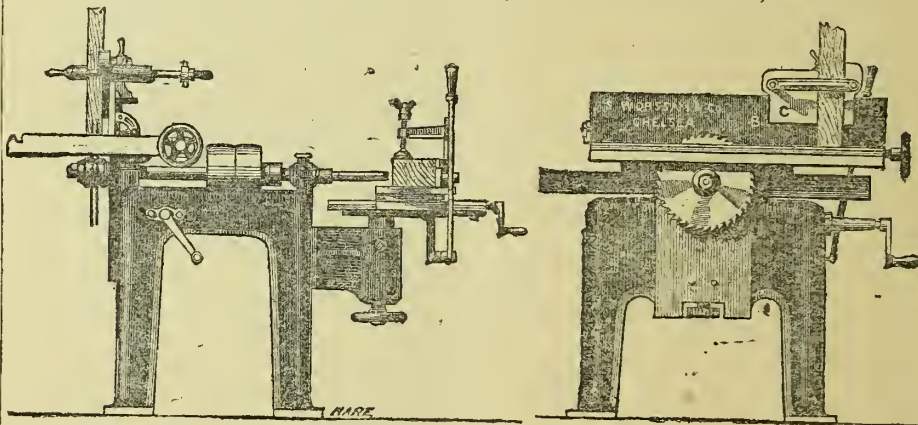
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PATENT BRASS GROOVED ORNAMENTAL POLE

with REGISTERED ENDS, RINGS, and BRACKETS to match; PICTURE RODS, MOULDINGS FOR ROOMS, STAIR RODS, WITH EYES TO MATCH, CORNICE MOULDINGS, &c., Stair Rods and Eyes of every description; Cornice Poles, Brass and Three-quarter Covered, Pulled, and Bent; Rings, Brackets, Ends, and Bands; Brass Desk, Pew, Organ, and other Railing; Picture Rods and Furniture, Curtain and Wardrobe Rods, Fire Screens, Stands and Arms;

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TO BUILDERS, CARPENTERS, UPHOLSTERERS, AND BLIND MAKERS.

J. AUSTIN and SON, Manufacturers of the above articles, particularly wish to direct the attention of the Trade to their

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of which they are now making four qualities, and they strongly recommend that in all cases they should be purchased in preference to the PATENT LINE made from Jute, which article has neither the STRENGTH nor the DURABILITY of FLAX, consequently cannot give so much satisfaction to the consumer. They also invite the particular attention of Upholsterers and Blind Makers to their improved Patent Blind Lines, which are very much superior to anything yet offered to the Trade.

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From WILLIAM TITE, Esq., M.P. for Bath, and Architect of the Royal Exchange, London.

House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have used both the sorts of Cement manufactured by your firm, and that of Messrs. Francis & Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good. I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant,
Messrs. White & Son. (Signed) WILLIAM TITE.

From R.O. MINNIE, Esq., Surveyor to Board of Ordnance, London.

War Office, Pall Mall, London, S.W.,

2d March, 1864.

GENTLEMEN,—In reply to your request, I have much pleasure in stating my favourable opinion of the quality of your Portland and other Cements, which have been extensively used in the Public Works connected with the War Department at home and abroad, especially in several of the fortifications now being erected in this country. On all occasions within my knowledge the quality has been equal to that of any other manufacturer, and has given great satisfaction.—I am, gentlemen, your obedient servant,
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to announce that Messrs. John Hardman and Co., of No. 1, Upper Camden-street, have resigned the business of Artists, Sculptors, Church Painters, and Metal Workers, in their favour.

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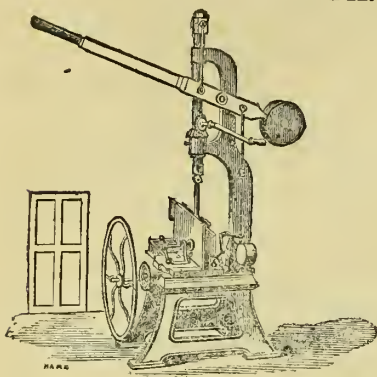
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Any sum up to £15,000 insurable on the same Life.

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SEPTEMBER 1, 1866.

1st & 15th
OF EACH MONTH.

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ILLUSTRATION:

PLANS OF COTTAGES ERECTED BY THE EARL OF CLANCARY.

TO ARCHITECTS.

PLANS are required by the Directors of the Belfast and Ulster Brewing Company (Limited), for the ERECTION on the Company's premises, Sandy-row, of suitable BUILDINGS. For plan of ground and other particulars, apply at the Company's Office, 24, Donegall-street, Belfast. The plan selected only will be paid for. Plans to be sent in not later than the 15th of SEPTEMBER.

JOHN REID, Secretary to the Company.
Belfast, August 9, 1866.

Contracts.

BOARD OF PUBLIC WORKS. NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be received up to the hour of 12 o'clock noon, on the 15th of SEPTEMBER, 1866, for BUILDING

A COAST-GUARD STATION, at RACHLEY, in the County of Sligo, to consist of Houses for One Chief Boatman and Five Men, with Watch-house, Boat-house, and Store, according to Plans and Specification to be seen at the Office of Mr. Denis Keane, Clerk of Works, Sligo, and at this Office.

Each Proposal should be for a lump sum, and must be accompanied by a separate Detailed Estimate, giving Quantities and Prices, and be endorsed "Tender for Rachley Coast Guard Station."

Both Tender and detailed Estimate should bear the Name and Address of the Proposer on the back.

Printed Forms for Tenders can be had at Mr. Keane's Office, Sligo, and at this Office.

N.B.—Persons Tendering should send in Testimonials as to character and competency, unless previously known to the Board.

By order of the Board,
EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 15th August, 1866.

• If this be not attended to, the Board cannot return detailed quantities to the unsuccessful parties.

WAR DEPARTMENT CONTRACT. NOTICE TO BUILDERS.

Office of Commanding Royal Engineer in Ireland,
Dublin Castle, 22nd August, 1866.

TENDERS are required for Works to be done in Warming and Ventilating the Quarters for Sergeants and Married Soldiers at

BEGGAR'S BUSH BARRACKS, DUBLIN,
IN THE
DUBLIN DISTRICT.

Persons desiring to Tender for the above Work must leave their Names at the Office of the Commanding Royal Engineer in Ireland, Dublin Castle, or at the District Royal Engineer Office, Dublin Castle, on or before Saturday, the 8th day of September, 1866, and pay the sum of 10s. 6d. for the Bills of Quantities, which will be forwarded to each Party as soon as prepared by the Government Surveyor.

THE DOWNPATRICK, DUNDRUM AND NEWCASTLE RAILWAY.

TO CONTRACTORS.—The DIRECTORS of this Company are desirous to receive Tenders from competent parties for the EXECUTION and COMPLETION of the ABOVE LINE of RAILWAY, some eleven miles long, according to the Plans and Specifications to be seen at the Office of WILLIAM LEWIS, Esq., Engineer, Leinster Chambers, Dame-street, Dublin, on and after the 27th inst., or at the Office, 15, Waring-street, Belfast.

Tenders to be addressed "The Directors of the Downpatrick, Dundrum, and Newcastle Railway Company," and lodged at the Company's Office, Belfast, on or before the 20th SEPTEMBER, 1866.

The Directors do not bind themselves necessarily to accept the lowest or any Tender.

Dated at 15 Waring-street, Belfast,
the 18th day of August, 1866.

SILAS EVANS, Secretary.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

9, CONDUIT-STREET, HANOVER-SQUARE, W.
Full particulars of the VOLUNTARY ARCHITECTURAL EXAMINATION, price Two Shillings or Twenty-six stamps, the MEDALS and PRIZES for 1866, and the PUGIN TRAVELLING STUDENTSHIP can now be obtained of the Librarian, at the Rooms of the Institute, as above.

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Incorporated under "The Companies' Act, 1862," by which each Shareholder's liability is limited to the amount unpaid on his shares.

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Of which not more than £3 per Share can be called up without the consent of the Shareholders being previously obtained at a General Meeting.

Deposit on application, Ten Shillings per Share; Deposit on Allotment, Ten Shillings per Share. No call to exceed One Pound per Share, nor to be made at intervals of less than Three Months.

If there be no Allotment the Deposits will be returned in full.

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HENRY MACLEAN, Esq., T.C., 69, Fitzwilliam-square, North (Chairman).
ALEXANDER JAMES FERRIER, Esq. (Messrs. Ferrier, Pollock, and Co.), 59, William-street.
JOHN BAGOT, Esq. (Messrs. Bagots, Hutton, and Co.), 23, William-street.
JOHN J. ROBERTSON, Esq. (Messrs. Jameson and Robertson), 43, Martowbone-lane.
JAMES CROTTY, Esq., Christchurch-place.
JOHN T. PURSER, Esq., 82, James's-street.
ALDERMAN GRIGG (Messrs. Gregg and Son), 18, Upper Sackville-street.

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Secretary (*pro tem.*)—
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Solicitor—

ROBERT EAMES, Esq., 34, Kildare-street.
Architect and Surveyor—
CHARLES GEOFFREY, Esq., C.E., 202, Great Brunswick-st.
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The plans have been approved of, and the works will commence in a few days.

TO CONTRACTORS, &c.

TO BE SOLD, a Portable 6 Horse-power Vertical ENGINE and BOILER combined, suitable for working a hoist pump, &c., made by GREEN, of Leeds. Price £112. Address R.M.H. Engine, DUBLIN BUILDER Office.

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HOGAN AND SONS, Stucco Plasterers, General Cement Workers, Modellers, &c., 168, GREAT BRUNSWICK-STREET, DUBLIN, beg leave to state that they are prepared to undertake Contracts in the above line. Ornaments for Cornices & Centre-Pieces for Ceilings supplied. FRONTS OF HOUSES done in Portland or Roman Cement. Materials supplied.

COUNTRY ORDERS strictly attended to, and first class workmen sent to all parts of the country.

N.B.—Pattern Cornices enriched, on view at the Establishment.

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Cattle Medicine of all kinds.
N.B.—Every article warranted genuine, and at the lowest price.

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FOR Samples of the above Stone, the Proprietors direct the attention of ARCHITECTS and BUILDERS to the new Union Bank, College Green, Dublin, the Lime Stone Dressings of which were prepared and furnished exclusively from this Establishment.

For Prices, &c., apply to

A. & N. HAMMOND,
Sheephouse Quarries, or Office, John-street, DROGHEDA.

WHITE BRICK.

THE Subscribers, as Agents for Ireland for Messrs. Allan & Mann, of Glasgow, would invite the attention of Architects and Builders to the unrivalled Brick manufactured by this Firm.

These are, in every respect, superior to any other White Brick manufactured.

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IMPORTANT TO BUILDERS.—Building

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On the shortest notice. All at reduced prices.
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(Late Foreman and Successor to W. R. Manderson),
Marble Works—173, GREAT BRUNSWICK-STREET,
Manufacturer of Tablets, Monuments, Tombs,
Head Stones, Chimney Pieces, Table Tops, Fonts, &c.

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Manufacturing House-smiths & Bell-hangers,
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Gates and Railings of all descriptions made.

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Monuments ..	from £5 to 40 0
All of the very best Limestone. No bad Stone used.	

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GALVANIZED IRON TUBES AND FITTINGS.
Crosley and Goldsmith's Patent Compensating Wet Gas Meter.

GUEST & CHRIMES, in calling public attention to the above Advertisement, wish to
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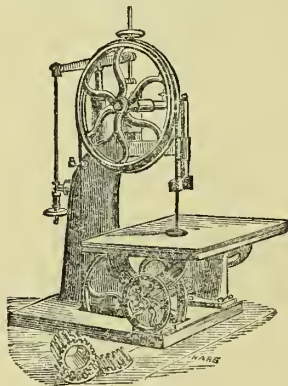
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Painters, Coachmakers, &c., of the Best Quality, and Lowest Prices. Observe the Address—
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IMPROVED ENDLESS BAND SAWING MACHINE,
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for PREVENTION of BREAKAGE to SAWS. Over 300
References can be given in England and upon the Continent,
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POWIS, JAMES, & CO., invite all who are thinking of Putting Down a MOULDING or FLOOR
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POWIS, JAMES, & CO., also invite Inspection of their IMPROVED "GENERAL JOINER"
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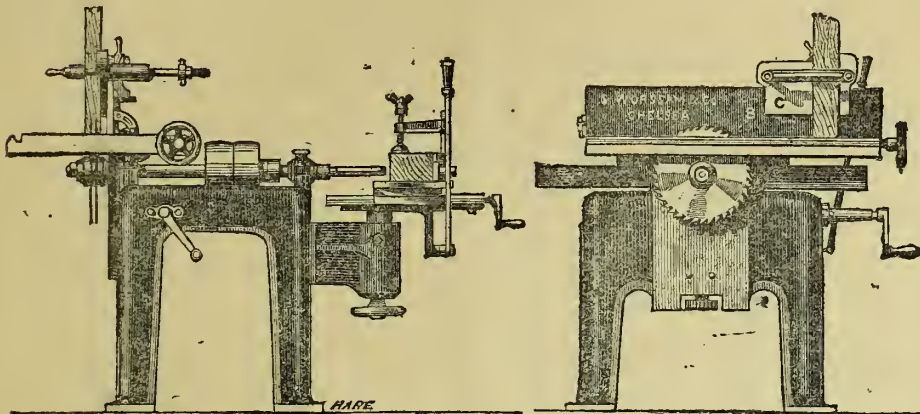
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All kinds of Flint Glass, cut and plain, Coloured Window Sheet, Optical Sheet, Coloured Lenses, Glass Chandeliers, &c. Agents at Dublin—Messrs. SIBTHORPE and SON, Cork-hill.

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Having long felt the importance of introducing a LABOUR-**SAVING** Machine, which, by combining several operations at a moderate cost, should meet the requirements of Builders and others engaged in the conversion of Timber, beg to offer for this purpose their "GENERAL JOINER" as above; which, in its present greatly improved form, will, with 2-horse power, do the work of, at least, 15 skilled Joiners in SAWING, CROSS-CUTTING, and SQUARING, PLANING, and THICKENING, MORTISING, TENONING, GROOVING, TONGUEING, RABBETTING, BORING, BEADING, MOULDING, CHAMFERING, &c., &c.

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Price in Zinc	23s.	Kitchen size	32s.
Ditto in Galvanized Iron ..	25s.	Ditto	35s.

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M. AMERY,

PICTURE FRAME MAKER, AND MOULDING MANUFACTURER,
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Inform the Trade and Public generally that he executes Wholesale and Retail Orders for every description of Frames, Fancy Wood, and Gilt Mouldings, on terms more reasonable, consistent with quality and finish, than any other House in Town.

THE INTERNATIONAL EXHIBITION PRIZE MEDAL, AWARDED 1862; ALSO THE DUBLIN MEDAL, 1865.

ESTABLISHED 1744.

AUSTINS' IMPERIAL PATENT SASH AND BLIND LINES,
TO BUILDERS, CARPENTERS, UPHOLSTERERS, AND BLIND MAKERS.

J. AUSTIN and SON, Manufacturers of the above articles, particularly wish to direct the attention of the Trade to their **IMPERIAL PATENT FLAX SASH-LINES,**

of which they are now making four qualities, and they strongly recommend that in all cases they should be purchased in preference to the PATENT LINE made from Jute, which article has neither the STRENGTH nor the DURABILITY of FLAX, consequently cannot give so much satisfaction to the consumer. They also invite the particular attention of Upholsterers and Blind Makers to their improved Patent Blind Lines, which are very much superior to anything yet offered to the Trade.

They can be obtained of all Rope-makers, Ironmongers, Merchants, Factors, and Wholesale Houses in Town and Country.

Statuary, Marbles, Cements.

CHIMNEY PIECES—in Italian, Belgian, Irish, and English Marble; suitable for Drawing-rooms, Dining-rooms, Bed-rooms, &c. A very large Stock to select from.

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SALMON, RICE, AND CO.,
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PLAIN AND ORNAMENTAL STUCCO
PLASTERERS, SCAGLIOLA and STATER ARTISTS, ASPHALTE MANUFACTURERS, take contracts in all parts of Ireland, and sell their statuary and house ornaments for reduced prices.
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CELEBRATED

LONDON ROMAN CEMENT,
LONDON PORTLAND CEMENT, and
KEENE'S MARBLE CEMENTS,
Now Sold at greatly Reduced Prices, by
C. LAVENDER,
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TESTIMONIALS.

From **WILLIAM TITE, Esq., M.P. for Bath, and Architect of the Royal Exchange, London.**

House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have used both the sorts of Cement manufactured by your firm, and that of Messrs. Francis & Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good. I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant,
Messrs. White & Son. (Signed) WILLIAM TITE.

From **R.O. MINNIE, Esq., Surveyor to Board of Ordnance, London.**
War Office, Pall Mall, London, S.W.,
3rd March, 1864.

GENTLEMEN,—In reply to your request, I have much pleasure in stating my favourable opinion of the quality of your Portland and other Cements, which have been extensively used in the Public Works connected with the War Department at home and abroad, especially in several of the fortifications now being erected in this country. On all occasions within my knowledge the quality has been equal to that of any other manufacturer, and has given great satisfaction.—I am, gentlemen, your obedient servant,
(Signed) R. O. MINNIE, Surveyor.

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GLAZED SEWER PIPES (Patent and Socket), and all Articles made of Fire-clay of superior quality, for Sale at the Depot,
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ROBERT BROWN.
Also, DRAIN PIPES of all sizes for Field Drainage.
Prices very moderate.

MESSRS. EARLEY and POWELLS beg to announce that Messrs. John Hardman and Co., of No. 1, Upper Camden-street, have resigned the business of Artists, Sculptors, Church Painters, and Metal Workers, in their favour.

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The Halkin Hydraulic Lime is the same as used in the construction of the Liverpool Docks, Manchester and various Waterworks, Collieries, and Mines throughout the country, being so long celebrated for its strong cementitious and connecting powers for Masonry in Water, can be supplied by Rail or Water to any part of the kingdom, either in lump (loose) or ground, and in barrels and bags. The Limestone can be bad in full cargoes, also their Cement in barrels, which is of a very superior quality, and warranted pure.

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KITCHEN RANGES, with high pressure Boilers for Steaming or Bath purposes; Galvanized Iron Roofing, and Fencing Wire, best quality.

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THE "SINGER" UNRIVALLED LOCK-STITCH FAMILY SEWING MACHINE, with new Patent Tuck Marker, and other valuable improvements, rendering it the most simple, complete, and effective Family Sewing Machine in the world.
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In New and Fashionable Designs.

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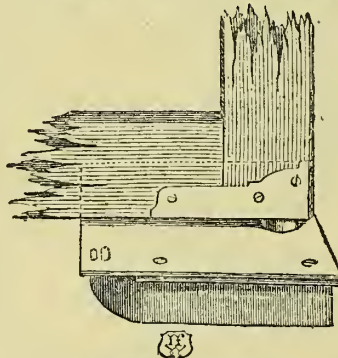
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To prevent mistakes and disappointment, it is particularly requested that all parties make sure that they are at No. 80, DAME-STREET, this being the only Establishment B. HYAM has in Dublin.

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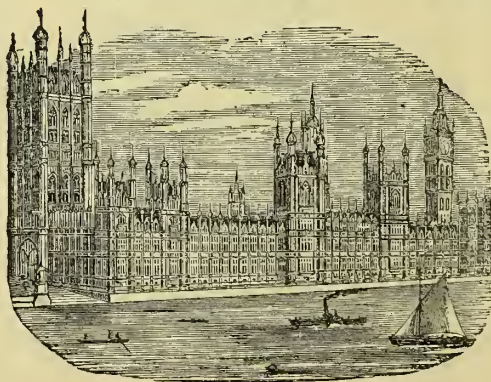
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The Dublin Builder.

VOL. VIII.—No. 161.

SOME NOTES ON IRISH CROSSES.

KILLAMERY.

FEW houses of humble pretensions, about twelve miles from Kilkenny, on the road to Clonmel, constitute the village of Killamery. High and wooded hills (pre-eminent among which is the beautiful mountain Slievnamon) and a vast expanse of fertile plains,

give to the locality of this village a picturesque interest. Here, on a small, rugged eminence, is the churchyard of Killamery, with its low and broken walls, crowded tomb stones, and hoary thorns; and, above all, an ancient cross, remarkable alike for its singularity and its beauty, and which is, fortunately, in excellent preservation, notwithstanding the many ages it has stood exposed to the elements in this wild mountain solitude. The cross is composed of three parts; the base, which is about 26 inches high; thence to the

cap, which is 8 feet 4 inches; and, lastly, the cap is about 15 inches high; hence the cross altogether is about 12 feet in height. The arms extend to 3 feet 10 inches, and the circle is 3 feet in diameter. The shaft of the cross, measured below, is 1 foot 6 inches wide in front, and 14 inches on the side; but at the top, immediately under the cap, it is only 12 inches wide in front, and 9 inches at the side. The cap is retained in its place by a rectangular mortice, which receives a tenon projecting from the upper arm of the cross. The material is a close-grained whitish sandstone.

DUNNAMAGGAN.

This cross is in a small burial-ground, a couple of miles from Kells, county Kilkenny. It is unfortunately broken into several pieces, which lie scattered about. As all the fragments are still in the graveyard, it is to be hoped that an effort will be made to have them united, in order to preserve this singular relic from destruction. The cross consists of two parts—the base and the supported portion. The base is about a foot and a-half high, and is in a very rough, perhaps time-worn state. The part above the base is fully seven feet high; the entire cross being eight and a-half feet in height. The thickness of the upper stone is about eight inches. There are four figures, in as many niches, on the shaft. These figures are of different heights; the tallest, which seems to be the figure of a bishop, is twenty-six inches high; the one on the east face is only twenty-one inches in height; and the two remaining are still

smaller. The figures do not rise beyond the general surface; their rather bold relief is caused by the niches being carved deeply. The circular part is thirty-two inches in diameter; there is no indication of any tenon for a cap on the upper arm. The apes are of unequal size and the whole execution rude. The material is a sandstone grit.

ULLARD.

The town of Graigue-na-managh is situated on the river Barrow, at the junction of the counties Carlow and Kilkenny; and about four miles from thence is the churchyard of Ullard. This place is bounded by a ditch, and in that ditch, with the sculptured face to the outside, the largest of three crosses is placed. The other face of this cross has the general forms roughly marked out, but beyond that there are no carvings. The two figures at the top are possibly SS. Peter and Paul; the centre group, Christ crucified, with two figures, holding—one the sponge with vinegar and hyssop, the other the spear with which the Saviour's side was pierced. This mode of treating the crucifixion is very usual on such works. One of the cross arms has a figure playing on a harp, probably intended for the Royal Psalmist. On the other cross arm is carved Abraham's sacrifice; we see the altar, with Isaac above it, Abraham stands, holding the sacrificing knife, and the ram in the upper corner completes the subject. On the shaft, which is evidently broken short, are portions of two large apes. The carvings on the base are very plain. The centre cross has Christ crucified, and some bold tracery. The smallest cross has at the top what are intended for human figures; perhaps the Apostles Peter and Paul. In the centre is Christ crucified, with the sponge and spear-bearers as in the first cross; next, we have Adam and Eve, with the tree of knowledge; below these, Abraham's Sacrifice; and at the bottom an injured panel that cannot be made out. These two crosses are inserted into the wall of the National school-room, in the chapel-yard at Graigue-na-managh, but are said to have been brought from Ullard. The three crosses are in granite.

TERMONFECHIN.

Termonfechin is in the county Louth, about four miles north of Drogheda. The cross, though small, is of great interest. The carvings are, generally speaking, sharp and uninjured. The material is siliceous sandstone. The cross is about eight feet six inches high. Christ crucified, with the sponge and spear-bearers; the Holy Ghost, or an angel, and a couple of other figures, are in the centre of the cross. The curves are ornamented with platted bands and interlaced serpents; zig-zag and platted ornaments of excellent design are on the shaft; the base is circular, and without ornament.

MOONE ABBEY.

Moone Abbey is near Ballitore, county Kildare. The cross is of granite, and the workmanship is rude; its form and carvings give it considerable interest. The entire height is twelve feet nine inches; there is a tenon at the top, which shows that there was a crowning stone. The cross arms are very nearly four feet wide. On the left hand side of this cross, or its face, are below the twelve apostles; next, Christ on the Cross, with the sponge and spear-bearers; next, a panel with a lion; above this a lozenge-shaped band, within which are four serpents united at their tails, and also sixteen small bosses outside the lozenge. Above this in the centre of the cross are four serpents united in a whirl; at

each side of the serpents are human figures, and at top a double S like pattern, like the Grecian symbol for the ocean. At the right side below are the five loaves and two fishes, typical of Christ feeding the multitude; next, the flight into Egypt; above which are the three Marys at the sepulchre, and the angel above it; an angel, human figures, and what seem to be animal forms, constitute the remaining subjects.

PROGRESS IN NEWRY.

THE town of Newry, situated partly in the County of Armagh, and partly in the County of Down, possesses many natural advantages. It stands in the centre of the lovely valley through which the Newry Water (anciently known as the Clanrye) flows from Carnmeen, on the margin of the most magnificent grouping of naturally picturesque landscape in Ireland. The town is bounded by hills on the east and west, while in the distance, on one side, are to be seen the mountains of Mourne, with the famed peak of Donard, and on the other, Tovernabane and the lofty Sliev Gullion. The streets are tolerably regular, the houses in the principal ones having handsome well-lighted shops. The local *Telegraph*, in an article in a recent number, announcing that "A few hundred houses are wanted" (perhaps "thousand" would be more correct), informs us that:—

"The population of Newry begins to outstrip its house accommodation. At the present moment the number of houses is inadequate to the requirements of the inhabitants. Outlying streets, which for a long series of years had been in a state approaching dilapidation, have recently assumed an appearance of comparative comfort and decent order, and the hand of improvement is visible in every direction. Newry has, so to speak, 'picked itself up' in a manner which few could have anticipated ten years ago, while various indications of steady enterprise point to still broader successes than have been yet attained. The erection of mills, in which numbers find employment at remunerative wages, has necessarily tended to induce a desire for a better description of houses than are obtainable under existing circumstances by persons of limited income. The inconvenience and positive danger, in a sanitary point of view, of overcrowding already begins to be experienced—an evil which must continue to extend with the prosperity of the locality so long as no additional houses are provided. We are hardly chargeable with exaggeration when we declare that here the value of house property has been magnified to an extent almost unprecedented in a country town, and within a period comparatively recent; and the instances are rare, indeed, in which landlords would not get far higher rents on the removal of the occupiers. This is certainly an unmistakable indication of the advancement of the town, and is all the more remarkable inasmuch as it had at one time reached that point of decadence at which the road to ruin may be said to commence. Building societies, which have for many years proved exceedingly lucrative speculations in England, might, we conceive, be introduced into this town with signal advantage. At all events the experiment would involve no serious individual outlay; and, under a proper system of management, there cannot be a shadow of a doubt that both suitable accommodation for occupiers and liberal gain for investors would be secured. Nothing can be more unsuitable for the working-classes than the kitchen arrangements of the houses in which they now live. The cooking apparatus is, in general, of the most primitive sort, 'ranges,' or ovens, being seldom found in these habitations—an omission which leads to a heavy waste of fuel, not to mention the inconvenience to the house-keeper. Nor is this all. The kitchen, which should be spacious and well ventilated, is invariably small and unsuited for the purpose for which it was designed. Builders should not fail to remember, when engaged in the erection of such houses, that the kitchen is really the principal apartment with the poor; that here they take their meals, and that it is also used as a parlour or sitting-room. In England, landlords, anxious to promote the welfare of the cottier, take special care that the kitchen of his dwelling shall be so arranged as to give every facility for domestic enjoyment. We trust that in the plans of new streets or single habitations in Newry, the architect will use his best efforts to render the poor man's tenement suitable in every respect for a home. As to the houses of the affluent little need be said. The wealthy are very well able to provide for their own comforts in the matter of dwelling places, and have ample power to remove from one locality to another in search of suitable abodes."

IRELAND FOR THE CAPITALIST.

In reviewing, in the August number, some recently-published works on Ireland, the editor of the *Practical Mechanics' Journal*, takes the opportunity of making the following very sensible and well-timed remarks, which we gladly transfer to our columns:—

"Politics no doubt are out of our domain; and everything that refers to Ireland, its condition and possible improvement, merges itself into politics or polemics in the end. Ought not this very fact become a precious diagnosis for the physicians who try to prescribe for the moral and social sickness that makes this part of the British Empire the weakness of the whole. If we all get back in discussing Irish evils and their remedies, as within a charmed circle, to politics and polemics, does not this point to these as the great seats of the evils? Those who know the island best, having lived long enough in it to acquire that insight into the interior working and condition of its people that long residence alone can give, and who have the advantage of being amongst the very few that, as strangers and sojourners in the land, have not had their eyes horn-covered, or their vision disturbed by the action of native and long-descended prejudices—do many of them think so? That legislation can do little nearly all concede; but the inevitable operation of natural causes, moral, social, and physical, is gradually working the cure of much that lawgivers are powerless to touch. Emigration of the native Irish, as Dr. Ingram has shown, is determined and regulated by causes that neither landlords, employers, nor lawgivers can reach: to lament its increase as a drain from Ireland is not more effectual than to lament the recession of the tide. But even now, and already, we hesitate not to say, that to Englishmen and Scotchmen who will overstep their prejudices, and use their eyes and ears in Ireland, and on the spot look out (ay, even in one summer's tour), for local sources of investment, and will manage what they may venture upon and put their money into for themselves—for such we say Ireland presents opportunities more numerous by far, and not inferior in assured return, than any other part of our thickly inhabited and worked-up country. The author of one of these works, Mr. Jennings, is in himself a proof of what may be done in Ireland by knowledge, courage, and freedom from the galling entanglements of local politics and polemics. He has been the creator of great chemical manufactures in the neighbourhood of Cork; and the light that flashes up at night, challenging the attention of the stranger, from his magnesia ovens, where he converts the native dolomite of his country into calcined magnesia, and whence he exports it all over the world, ought to be a pillar of fire to show to every wandering Briton, that manufacturing success in Ireland is not a myth; only for success it must be, as in this case, of a sort fitted to the soil it is to thrive in."

On the same subject our contemporary, the *English Mechanic*, bears testimony of a similar character. We rejoice to find that our statements in the DUBLIN BUILDER as to the capabilities and resources of Ireland are at length borne out and corroborated by those who also have had information through a reliable source or from personal experience:—

"It is more than likely that what legislation cannot accomplish for Ireland commercial enterprise will step in and do. For Ireland whisky can do a great deal—vide Kinahan's "L.L." and many other brands; oysters and fish can also show a good account—vide the various breeding grounds and waters; it has been well shown what could be done in cements and dolomites; experiments have proven that peat, treated in a certain way, can be utilised for burning in locomotives, and under other boilers—Ireland has a very large quantity of the raw material ready to hand; a large steamer was launched the other day on the Liffey—a thousand can be launched on the same navigable stream, and there are plenty of hands to be had, either from Clyde side or the Tyne and Tees; flax is grown largely, and sent off as manufactured goods to a large amount yearly—more can be grown and worked up; and now we have attention drawn to Ireland as a fine field for the growth of beet-root and the consequent manufacture of sugar from *B. vulgaris*, or of food for cattle up to Thorley's mark from the variety *campestris*. Some considerable quantity of the root is grown and turned into sugar, or will be turned, for we notice that a large beet-sugar refinery has just been completed and opened in Dublin, by Messrs. Bewley and Co. This is a splendid example for Irish speculators, which it is most earnestly to be hoped will be followed up. The beet-root may not only be easily cultivated in the Sister Isle, but profitably also, for we are informed that the produce of an acre in Ireland is nearly half as much again as it is in France—and that is saying a good deal—the soil and climate being much more favourable. There is no doubt that a fine field for capital is to be found in Ireland; its mineral treasures await development; much more

could be done in pasturing than is now done; and where railways languish for lack of business they should scarce be able to keep with the demand. We sincerely recommend an investment in Irish industry to those who have thousands lying idle: they will find it more profitable than Turkish Loans, Moldavian Oil Wells, Circassian Cream Companies, and such like problematical affairs. And those who are inclined to try the Sister Isle as a field for investment may lay the "flattering union to their souls" that they are cutting out the Government entirely in the pacification of as fine a country as was ever neglected by landlords."

LABOURERS' COTTAGES AT DEER PARK.

Our illustration presents elevations and plans of four cottages recently erected for the Earl of Clancarty at Deer Park, Ballinasloe, and for which he was adjudged the gold medal of the Royal Agricultural Society of Ireland. The committee appointed to inspect Farm Buildings, Cottages, &c., report to the Society that these are "well-built cottages, with a good deal of accommodation, having a very convenient form of step-ladder or cheap stair, eight inches in head and eight inches in rise, which gives sufficient width for the foot to allow the ladder to be sheeted at the back. The four cottages are in a row, with back doors which open out of a small scullery, taken off the bedroom on the ground floor; altogether, they are a well constructed, good, and reasonable lot of cottages, and merit the prize, which we award them."

The total cost of the erection of the four cottages was £278 17s. 7d. (or about £70 each), made up of the following varied items:—

120 perches of masonry, at 7s.	£12 0 0
30 perches in foundations, at 7s.	10 10 0
30 perches of excavations, at 10d.	1 5 0
44 rough quoins, at 1s.	2 4 0
16 door sills, at 5s.	4 0 0
14 window sills, at 5s.	3 10 0
2 sink stones, at 7s. 6d.	0 15 0
4 hearth stones in kitchens, at 5s.	1 0 0
4 Do., up stairs, at 6s.	0 14 0
127 yards of 4-inch brick and stud walls, at 2s. 3d. ..	15 8 3
5 cubic yards of brick chimney, at 18s.	4 10 0
4 grates in kitchens, set with fire brick, at 15s. ..	3 0 0
4 Do., up stairs, at 6s.	1 4 0
21 squares of roof and slating, at 60s.	63 0 0
70 ft. of ridge tiles, set and pointed in cement, at 1s. 3d. ..	3 10 0
8 doors and frames, back and front, at 18s. ..	7 4 0
20 inside doors, hung complete, at 13s.	13 0 0
8 windows in front, at 35s.	14 0 0
6 Do., back and ends, at 10s.	2 0 0
4 stairs, at 25s.	5 0 0
4 sets of shelves in scullery, at 6s.	1 4 0
4 sets of shelving to wall, whole of stairs, at 25s. ..	5 0 0
4 sets of shelves in wall presses, at 5s.	1 0 0
910 ft. superficial of joisting and flooring, at 5d. ..	18 19 2
200 ft. lineal of extra board to eave on gable, at 3d. ..	2 10 0
56 cubic yards of tiling in four houses, at 1s. 6d. ..	4 4 0
painting in and out	5 0 0
312 yards of two-coat plastering on walls, at 6d. ..	5 6 0
120 yards of ceiling, at 1s.	6 0 0
240 yards of rough cast, at 6d.	6 0 0
71 yards of mortar floor, at 8d.	2 7 4
	£256 4 9

OFFICES.

34 perches of masonry, at 7s.	£11 13 0
10 perches of excavation, at 8d.	0 6 8
100 feet lineal of rough coping, at 3d.	1 5 0
190 feet of Malbay flags on piggyery and privy	3 19 2
4 doors and frames to piggyery, at 6s.	1 4 0
4 doors to privies, at 7s. 6d.	1 10 0
4 seats to do., at 2s. 6d.	0 10 0
80 feet of sewer, at 6d.	2 0 0

Total for offices, £22 12 10
Total for four cottages, 256 4 9

Total, £278 17 7

The Council of the Society in their report (just issued) say that they "have again to express their concern that the competition for the challenge cups and gold medals offered for the improvement of labourers' dwellings and farm buildings has not been more general." We trust that the examples heretofore set by resident landlords such as Lord Clermont, Lord Clancarty, and others, will be followed up, and that we may have our agricultural labourers as well as our town artisans comfortably housed. The Royal Agricultural Society deserves every encouragement for its praiseworthy efforts in this respect as well as in others for benefiting the country at the present time.

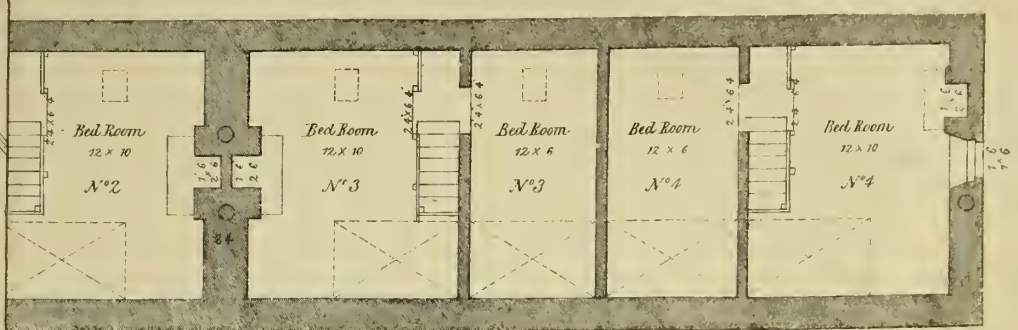
ROMAN CATHOLIC CHURCH OF ST. PATRICK, MONKSTOWN, DUBLIN.

This building, now nearly completed, is in the "Early French" style of architecture. It is placed on an elevated position, nearly due north and south. The principal view of the building obtained from the Dublin road is the western front, which on this account is rendered as effective as possible. The

north front, with its fine cross-surmounted gable, contains a splendid rose window with elaborately carved Caen stone mullions, and an arcade of niches divided by pillars of polished Aberdeen granite, and adorned with backgrounds of green porphyry. Above the principal entrance to the nave a black marble polished shaft sustains a pedestal for the statue of St. Patrick, and beneath, the double-pointed arches of the great doors complete the exquisite ensemble of the main section of the exterior of the sacred edifice. At the left a two-light lancet window and a triplet of lancet opes light the baptistery at the northern end of the eastern aisle, and at the north-west angle rises the fine, bold tower, which has been carried up to two-thirds of its intended elevation. It is adorned on the front side with a fine triforium, with black marble shafts dividing the arches, and with three elongated lancet opes, which furnish light to tower stairs. The material used in the construction of the walls is rusticated granite, relieved by chiselled limestone, and faced with Bath stone. The sacristy is erected at the south-eastern angle, and harmonises well with the rest of the building. The interior is divided into nave aisles, choir, chancel, chancel aisles, and baptistery. The apse or chancel is five-sided, lit by seven tracery windows, from which rise the rich groining of the ceiling. The chancel arch, rising to the full height of the roof, is supported by exquisitely polished shafts of Cork red marble. The capital and the arch itself are of Caen stone carved to represent fruit, foliage, and flowers. These are from the works of Messrs. Farley and Powells, Camden-street. The arches dividing the aisles from the chancel are upheld by double pillars of Cork red marble, and six bays of stone arches at each side divide the nave from main aisles. These arches rest on shafts of finely-finished Mitchelstown brown porphyry, having circular bases of white-veined Italian marble, and sub-bases of Ennis black limestone. The aisles are lit by twelve lancet windows on either side, and the clerestories contain triplets of similarly shaped windows, surmounted by double arches sustained by square polished marble pillars. The roof is of wood-work, divided into panels, and rests on shafts springing from consoles ready for carving. The extreme length of the church is 133 feet, and its breadth 51 feet 2 inches. The nave is 24 feet 6 inches in width, and the aisles 13 feet each. The centre of the nave is paved with Minton's encaustic tiles, and the remainder of the floor is boarded. The organ loft above the main entrance is sustained by a Caen stone elliptical arch. Our readers will find in No. 143 (December, 1865) an illustration of the interior of this church. The designs are by Messrs. Pugin and Ashlin; Mr. Meade, builder, by whom the work has been well executed. It is intended that the ceremony of consecration will take place on the 15th inst., and will be performed by Cardinal Cullen.

SANITARY.

The recently-appointed Public Health Committee met on Wednesday last, in the City Hall; Henry Maclean, Esq., chairman. The Town Clerk was directed to prepare notices and have them served by the police sergeants in the pay of the Corporation upon the occupiers of houses in the poorer districts of the city, cautioning them against throwing objectionable deposits on the streets, and informing them of the order of Committee No. 1, directing such districts to be scavenged twice daily, and that the carts were ordered to receive all such deposits from the various houses. The question of keeping the water supply intact having been brought under the notice of the committee, it was resolved that the Royal and Grand Canal Companies should be asked to have the bilge water in the boats plying on their canals pumped out whilst passing through the locks under the inspection of the lock keeper, and that the depths of the boats should be taken at a lower level on the two canals than that of our water supply. The following resolution was adopted:—"That we respectfully apply to the Irish Executive for the opinion of the law officers of the crown, as soon as possible, as to the public body in the city, if any, which possess the power to provide a refuge for the families of persons obliged to leave their dwellings during the time of disinfection, in which deaths from cholera have taken place, or in which persons have been suffering from that disease upon their being removed to hospital." The committee ordered advertisements to be inserted in the public papers, calling on all owners of property having walls in lanes, alleys, or courts, to have same cleansed and whitewashed, and suggested that Committee No. 1 should cause the list of streets, and the days on which such streets are directed to be scavenged, to be published. Summonses having been directed against several parties for non-observance of the sanitary laws, and the routine business disposed of, the committee adjourned to Friday, at twelve o'clock noon, and resolved that in future they would meet at two o'clock on every Tuesday in place of twelve o'clock on Wednesday.



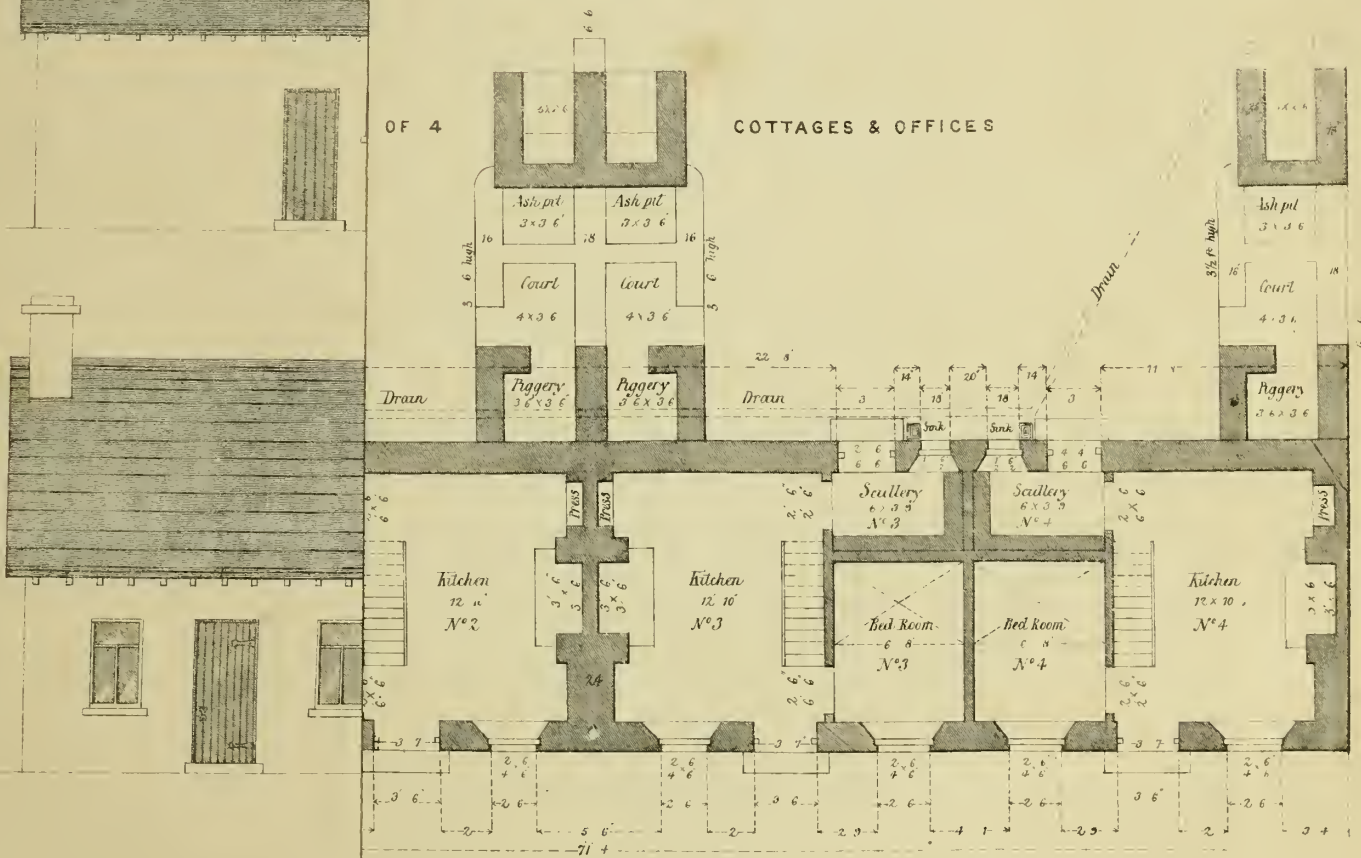
ATTIC PLAN

FLANK ELEVAT

ELEVATION OF OFFICES

OF 4

COTTAGES & OFFICES



10

10

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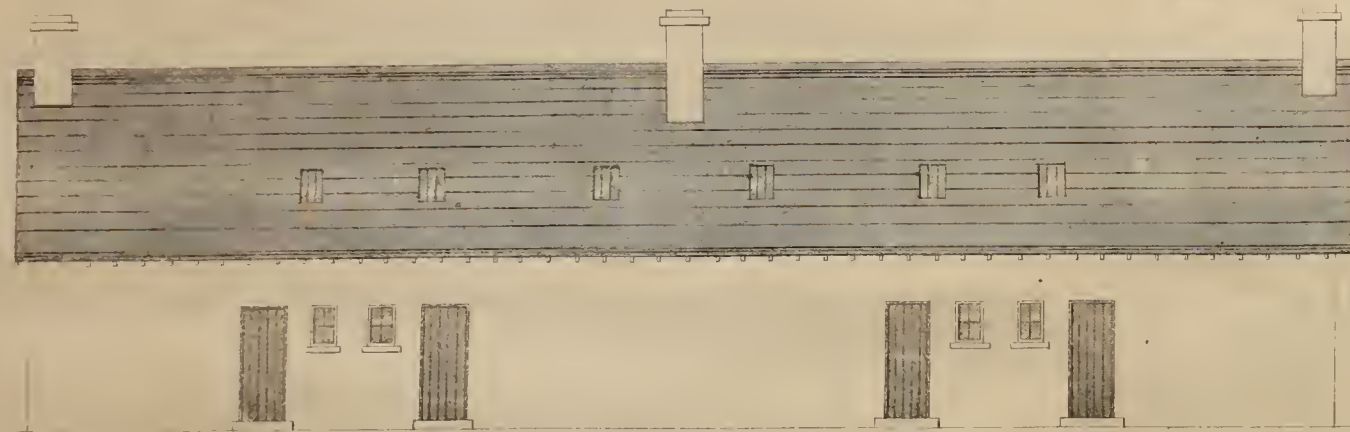
PLAN OF COTTAGES Erected by the Earl of Clancarty.



SECTION



FLANK ELEVATION



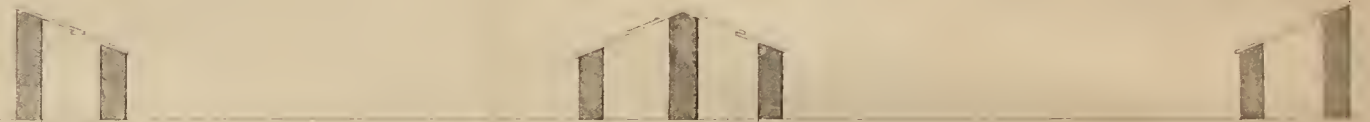
REAR ELEVATION



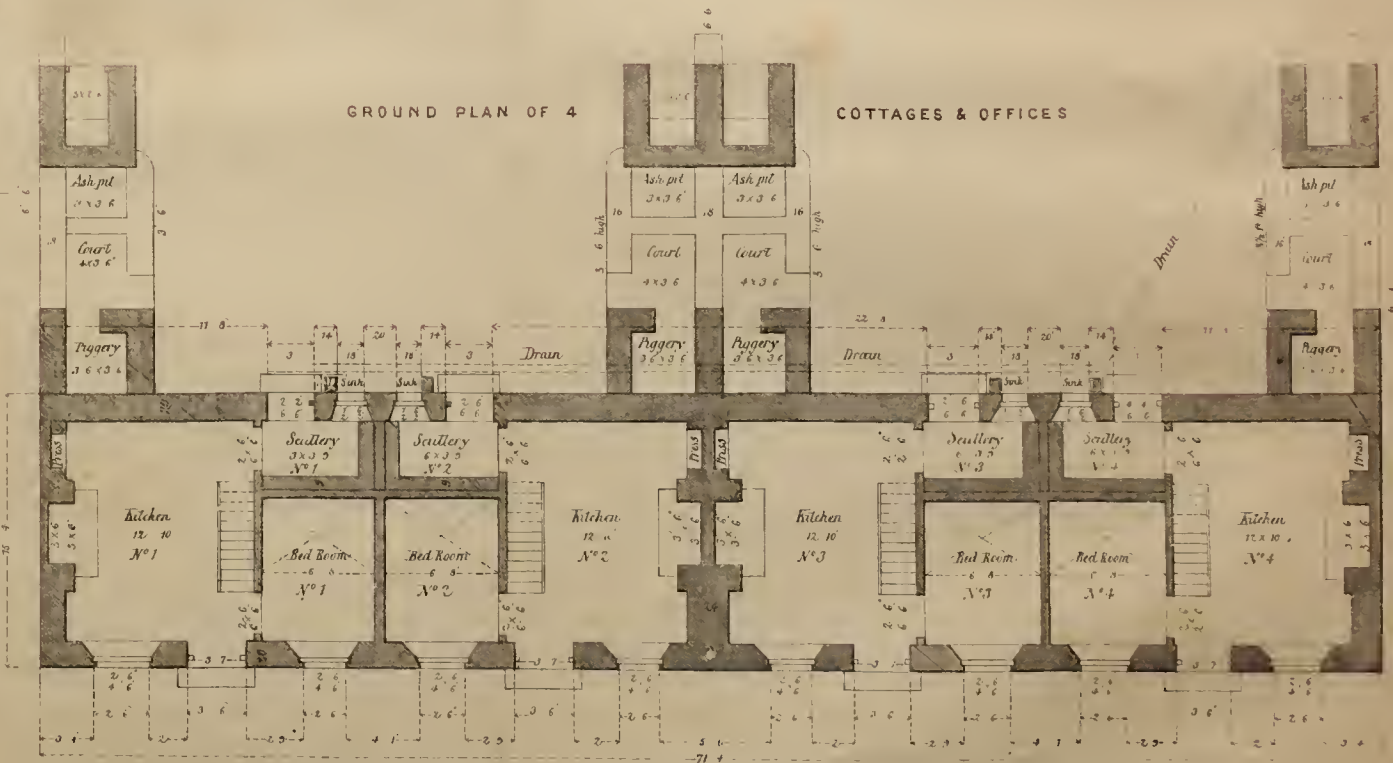
FRONT ELEVATION OF FOUR LABOURERS COTTAGES



ATTIC PLAN

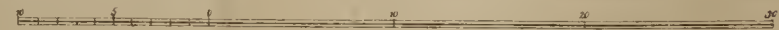


ELEVATION OF OFFICES



GROUND PLAN OF 4

COTTAGES & OFFICES



ON THE SCULPTURE IN WESTMINSTER ABBEY.*

AMONGST the older monuments to be especially noticed are three in the choir—namely, those of Edmund Crouchback, earl of Lancaster, son of Edward II.; of Aveline, his wife (died 1275); and that of Aymer de Valence, earl of Pembroke (died 1323). They are admirable illustrations of the elegant and yet rich style of monument of their time. The precise date of their erection is not known, but from the general treatment, the costume, and the architectural details, they may probably all be placed at between the middle of the reign of Edward I. and the beginning of that of Edward III. There is also so much similarity in the general design, that it might be fairly imagined that the same artists were employed on all the three works.

Crouchback died in 1296. His effigy lies on an altar-tomb. He is clad in chain-mail, and wears a close round helmet. The figure is slightly turned to the right,—a movement that may have been intended to convey the idea of looking towards the altar. This monument exhibits the peculiar sculptured enrichment that began at this period to characterize these designs. The sides of the tomb are filled with small figures in niches, under canopies; and the different portions of the lofty canopy which surmounts the whole work abound with decorative details. In the large trefoils, in the apex or pediment, are figures of the earl on horseback, armed in mail. The whole was gorgeously coloured and gilt, and remains of this may still be discovered in some parts of the monument.

The monument of Aveline, his wife, the daughter and heiress of William de Fortibus, earl of Albemarle, consists of an altar-tomb, upon which, under an elevated canopy reposes a recumbent figure of this lady. The head rests on two cushions, supported by angels. The dress and drapery of this monument are remarkable for the elegant taste displayed in their composition and execution. She is represented in a hood and coif, which fall over her arms, her hands being raised in the act of prayer. The other part of her costume consists of a loose robe and long flowing mantle, reaching to the feet; and in the graceful arrangement of these the sculptor has shown himself a consummate artist. With carefully studied form, there is a character of quiet repose quite in harmony with the subject.

The third monument referred to, of Aymer, or Andomer, of Valence, resembles in its general features that of the Countess Aveline, but its dimensions are greater: it is more lofty, and the enrichments appear to have been more elaborate. As in the other examples, the figure is recumbent on an altar-tomb. The earl is in chain armour, with a surcoat of his arms. The hands, which no longer exist, were evidently raised on the breast as if in prayer. There is an interesting passage in the introduction of two small half-kneeling angels at the head of the earl, supporting on their hands a third figure draped. This is too much injured and broken to afford any details, but it has been thought to represent the soul of the deceased being thus held up by angels on its ascent to heaven. No mere description would do entire justice to this very remarkable work. In its details it exhibits the peculiarities of the Gothic style, in its fanciful and elaborate accumulation of crockets, foliated cusps, varied trefoils, and similar enrichment; but if the purpose of the artist was to produce a striking effect, and to impress the spectator with a solemn yet pleasing train of thought while contemplating this noble and beautiful memorial of the great earl, there can be no question that this monument deserves to be considered, of its class, a most valuable work of art. The sides of the tomb are filled with statues, now, alas! much mutilated, and in a large trefoil panel in the pediment of the canopy appears a knight fully armed, on horseback. The whole of the monument has been richly gilt and painted, and, like the works previously described, was studded, in every part that would allow of it, with shields with heraldic bearings painted or emblazoned. These tombs are surmounted by lofty, enriched canopies, tapering upwards with every variety of accessorial decoration. Crockets run along the exterior lines, while foliage, diapered grounds, trefoils, quatrefoils, enriched cusps, gilding, enamelling, and colour, now much dilapidated and defaced, formed the costly details of these memorials of rank and greatness. An altar-tomb monument, in the chapel of St. Edmund, having on it a recumbent effigy of William de Valence, earl of Pembroke, whose death occurred in France in 1296, deserves especial notice here. The body of the earl is believed, from an expression in the old inscription, now no longer existing, to be deposited in the stone tomb which forms the lower part of the monument, but the effigy is placed above this, on a long wooden chest. The figure is in chain armour, with a surcoat extending to the knees. An

enamelled emblazoned shield suspended by a richly-decorated belt, is on the left side. The head, dressed in a close skull cap surrounded by a flowered fillet in which are sockets which formerly held precious stones, rests on an enamelled pillow, and a lion, much mutilated, supports the feet. The hands are raised as in prayer, and the portions of the dress that can be examined closely are diapered. There is also much gilding and enamelling still perceptible in the enrichment of this interesting work. But the circumstance that calls more particularly for notice is, that the statue itself is made of wood (oak), covered with plates of metal (copper), richly gilt, while the effect of the chain mail is given by engraving on the metal. It is said this monument was erected by Aymer de Valence to his father's memory.

The much-injured monument of John of Eltham, earl of Cornwall (son of Edward II.), who died in 1334, merits attention as a good specimen of the treatment of such works. The effigy is made of alabaster; and the details, of plate-armour, surcoat, gorget, coronetted helmet, with the other proper accessories, give great antiquarian interest to this work. The coronet is of the ducal form, having alternately small and large trefoil leaves; and it is thought that this is the earliest authority for its being so represented. There is nothing unusual in the style of art exhibited in the sculpture; but with the small attendant angels at the head, and the figures in niches on the side of the tomb, it affords another of the numerous valuable examples of the monumental style of the fourteenth century. There was formerly a very beautiful canopy over this tomb, but there are now no remains of it. The accessorial statues are much broken, and many portions of the monument have doubtless been stolen.

The introduction of knights fully armed and mounted, representing no doubt the noble persons whose larger effigies are placed on the tombs, in the decoration of the canopies of the monuments to the two earls of Pembroke, is the only instance in this church of a reference to the worldly deeds or occupation of the subjects of the memorial. There are examples in equally early works in other places of a deviation from this rule of confining the accessories to religious objects only, as angels and attendants, sometimes relations, but more frequently ecclesiastics, but none occur here except in the slight degree referred to. Nor is there any example of the double representation of the subject; first, in the figure on the tomb, habited in the usual costume; and, secondly, showing the corruption and decay of the body in death; either with the skin shrivelled on the bones, or the bare skeleton laid out.

These characteristic examples, selected from the large number of interesting monuments of the Gothic or Mediæval school of art, are sufficient to convey a notion of the best monumental sculpture prevailing in what has been thought by many the best period of Gothic architecture. Judged as productions of *fine art*, it need scarcely be said they fall far short of the excellence that the remains of sculpture of a much older date show the art was capable of attaining. They have, however, their own peculiar merit, arising out of the sentiment which pervades them, and the propriety of their design; as expressive of certain feelings, and for its appropriateness, both to place and object. There is a truly serious and religious character in the *motives* of these works, which subdues and tranquilizes the feelings of those who contemplate them, carrying the reflections of the thoughtful to objects beyond the present. In this respect, however deficient they may be in technical qualities, they fulfil a great purpose, and they stamp the monumental design of the fourteenth and fifteenth centuries with a principle which must be admitted to be one of high value, and worthy of praise and imitation. It will not be desirable here to multiply the specimens of the immediately following dates after those already particularized; but it may be observed, in support of remarks already made, that the subsequent monuments were not proofs of progress in sculpture. The technical deficiencies of the works of the two centuries just surveyed were not replaced by any valuable development of style or beauty of form, even where a wider practice may have induced some greater readiness and facility of mere execution. The monumental form, of recumbent dead or dying and praying figures was still preserved. Either by prescription, habit, or feeling this style of treating the subject was happily and properly maintained; but, it will be seen that a new and not an improved feature was admitted into these designs, which interfered disadvantageously with the spirit of the old types.

The tomb of the royal founder of the chapel, upon which are placed the effigies in bronze gilt of Henry VII. and his Queen Elizabeth, is so well known, that it would unnecessarily intrude upon our limited time to describe it in detail. The statues, as well as the accessories, were designed by a celebrated

sculptor of Italy, Pietro Torreggiano, the contemporary and rival of Michelangelo. These figures, in royal costume, are placed on a tomb of black marble, at the corners of which, somewhat uneasily balanced or sitting, are four nude cherubs or angels. The monument is enclosed within an elaborately enriched screen or "closure," also of bronze gilt, but now, like the statues, blackened by the rust of ages.

This might properly conclude our necessarily brief notice of this marvellous chapel; but as the name of Torreggiano has been mentioned, it will be right to direct attention to one other work, said to be by him, in connection with this chapel. In the south aisle is the effigy, in bronze gilt, of Margaret, countess of Richmond, the mother of Henry VII. The aged and noble lady is represented in the dress of a nun, with a mantle over all. The details of this figure deserve careful examination. The hands, in the act of prayer, are very true in character and form, and give the idea of having been cast from moulds taken from nature.

It need scarcely be said that the accessories of Torreggiano's works exhibit much of the bastard Italian style of his school as opposed to true Gothic; and there can be little doubt that the fusion of styles, as the mixture of the classical orders with certain Gothic traditions, are to be traced to the employment of foreign artists on the more important monuments erected in the churches of this country. The recumbent effigy was still insisted on, but the accessories were not strictly required to harmonize with any particular style of architecture; and thus, especially in the designs of the period succeeding the Perpendicular phase of Gothic, are found the most capricious introductions of Corinthian and other architecture of the debased forms of the classical orders,—precisely as they occur in continental design of the time. As this corrupt style was introduced in this country about the time of the Reformation, it has been said, without any reason, that the Reformation was the cause of the change and fall of religious or ecclesiastical art; when the fact is, the same bad and even worse taste is found in Italy, from whence it reached England. The sixteenth century gives a date to this false style of design; but the corruption of taste is to be sought for, as numerous monuments show, in the productions of those countries which, at that time, were much more advanced in art than England.

The period of true Gothic sculpture may be considered to be completed at this date, the middle of the sixteenth century. Already sculptured monuments of a more mixed style were executed, and it will be seen that this, in a very short time, entirely superseded the old simple character of Mediæval and ecclesiastical art.

It has already been seen that lofty, highly-enriched canopies formed a striking feature in the early monuments of the Gothic period. The same protecting roof or shrine is found in the monumental design of the post-Mediæval time, and equally exhibiting a great quantity and variety of decoration. Colour, gilding, inlaid marbles, armorial emblazonment, scrolls, were profusely employed, as in the same class of design in the fourteenth and fifteenth centuries; but though there is quite as much meaning in the introduction of lozenges, twisted columns, urns, and other ornaments in these cumbrous monuments as in crockets, finials, cusps, trefoils, and the other fanciful devices of the Gothic canopies, the latter were part of, and in harmony with, the architecture with which they were associated, which the ponderous vagaries of the sixteenth and seventeenth centuries were not. This, independently of other circumstances, constitutes the great difference between the two; and it must be admitted that, in an art point of view, the latter offer no compensating qualities. Two monuments in Westminster Abbey, of great historical interest, at once offer themselves in illustration of these remarks. They are the tombs of Mary Queen of Scots, and of Elizabeth Queen of England. The former stands in the centre of the south aisle of Henry VII.'s Chapel: that of the English queen in the north aisle. As in the monuments of the earlier style, the effigies of these princesses form the main subject of the design. The inferior character of the sculpture, generally, is at once evident. Mary is represented in full dress, with her hands raised and pressed together, as if in prayer. The dress is elaborately worked, but is wanting in true artistic treatment; the folds not falling gracefully, but composed in heavy and straight lines, as in a standing figure, and then gathered in unseemly confusion at the feet. The hands have suffered injury, some of the fingers being broken off; but they are small and elegant in form; and the face, young, and having a gentle expression, is of a pleasing character. The architectural portions are cumbrous; and every species of decoration that could be crowded into the design is lavishly introduced.

The monument of Queen Elizabeth is not on quite

* By Professor Westmacott, R.A.

so large a scale as that of Queen Mary, but it is composed on the same principle, exhibiting profuse and cumbrous ornamentation totally devoid of taste. The effigy surmounts an elevated table tomb. The Queen is in royal costume, with a small crown on her head. In her left hand she holds a globe, in the right a sceptre. The drapery is in large quantity, ill designed, and, like that of Queen Mary, stands up stiffly, instead of falling over to the ground. The order, if it can be so called, of the architecture of these two monuments is Corinthian; and therefore entirely out of harmony with this beautiful chapel of a most enriched character of Perpendicular Gothic.

This, however, must be a difficulty with regard to all works of later date that are to be placed in older erections. Unless the style of the architecture be imitated, the more modern works must always appear anomalous. Yet the mere copying, in part, of an older style deprives works of anything like a character consistent with their own date. They lose all contemporary distinction, while they are no trustworthy authority of the style they imitate.

A modern statue represented recumbent and in prayer is as fitting a type of a Christian in the present day as it was five centuries ago; but placing such a figure under a Gothic canopy, with all the accessories that mark the peculiar art of a particular and past age of architecture, though it may be very like the older work and very pretty, is, after all, incongruous. The statue expresses a sentiment, and a beautiful because a true one; but copying the architecture of another age is an anachronism. Every work of art should be truthful; and one of the most valuable recommendations of art is its power to illustrate its own age. If the age has no distinctive expression in its architecture, the difficulty is only increased; for then there can be no real or original design. It must be factitious and borrowed.

Two of the most important and, to Englishmen, interesting monuments in the abbey have been selected to illustrate the unfortunate taste that was now introduced. So long as the recumbent figure of the deceased was made the first object, a principle was preserved which gave character and interest to the design; but, soon after the introduction of this style, allegory was resorted to, and the monuments not only exhibit the effigy of the principal subject of the monument, and occasionally the figures of descendants, as sons and daughters of all ages, but semi-classical figures of the virtues, as Temperance, Prudence, and the personification of warlike or learned attainments, in statues of Mars, Minerva, and other heathen images, overload the design, and deprive it of all character of repose.

Three very remarkable examples of this mixed character offer themselves to notice in this (Henry VII.'s) chapel. They are the monuments of Villiers, Duke of Buckingham, and his family; of Sheffield, Duke of Buckingham; and of the Duke and Duchess of Lenox, in three of the chapels at the east end of the nave. These fully illustrate all the peculiarities referred to, and they are also very good specimens of the state of art of the time. In the large composition of the Lenox monument there is much to arrest attention in the superior quality of the sculpture.

The Gothic monuments exhibit attendant angels at the head and foot of the effigies, ministering in various ways; and small figures of holy persons, and even of relations, introduced as mere accessories, are seen arranged in niches in the lower part of the tomb. In the later monuments these accompaniments assume a much more pronounced character. Big, naked, chubby boys, winged and fluttering about, or sitting or standing in different parts of the monument, take the place of the small, draped, kneeling figures that support the pillow of the deceased in the Gothic monuments; while lines of sons and daughters, sometimes life-size, are placed in the base, or in the back-ground of the design, kneeling, or praying against a lectern. The males usually are arranged on one side, the females on the other. Another peculiarity is often seen in these family tombs; and that is the introduction of deceased children, wrapped in swaddling or grave clothes, lying horizontally, on the side of the sex to which they belong. The monuments of this style,—like the older works, again, in this respect,—are usually richly gilt and painted; and a variety of materials is used in their composition, as coloured marbles, alabaster, and brass, which, at least produce a gorgeous effect, if they cannot be reconciled with good taste.

The Abbey possesses many examples of these designs, in which, notwithstanding the indifferent art exhibited in the sculpture, we still recognise a respect for the old religious traditions. The recumbent effigies, with uplifted hands and serious expression, arrest attention and are aids to reflection; but the time came when the more personal honour or glorification of the subject of the monument was

to be illustrated, and the quiet tomb character of the design was superseded by the endeavour to give prominence to the worldly dignity of the deceased. The figures are now turned on their sides; some lean on their elbow, looking out from their resting-place, as if inviting the notice and admiration of the passers by. The various chapels, to be visited after this lecture, offer many examples of this class of monument. It will be remarked that, almost universally, the sculpture is bad. The dresses seldom are designed to suit the recumbent attitude of the wearer, the folds usually running, as if stiffly starched, in parallel and horizontal lines, instead of falling with their own weight. In this respect they are curiously similar to the stiffness of Gothic art. There are some remarkable examples of designs of the kind in the chapel of St. Nicholas; they are, however, of various degrees of artistic merit. Many of these tombs are in memory of persons eminent in history, and have great interest apart from the illustration they afford of the monumental art of the period. The neighbouring chapel of St. Edmund also contains some examples worthy of notice.

Before noticing a few other works of the sixteenth and seventeenth centuries, it will be proper to make particular reference to two striking monuments in the united chapels of St. John the Evangelist, St. Michael, and St. Andrew. The first is that in memory of Lord and Lady Norris, early in 1600. The effigies of both, in alabaster, lie recumbent on a raised tomb. A canopy is above them; on each side of the composition, at the base, are three kneeling figures, life size, dressed in the armour of the day, representing the six sons of the above. This monument is very striking, not merely on account of its great size, but for the sentiment expressed in it. Although the sculpture is not fine, *quoad* style and technical value, the motive of the design is good and appropriate. The effigies of the heads of the family reposing in death, with their sons kneeling and praying around them, is a touching and beautiful subject, well fitted for a mortuary chapel.

The next monument in this chapel to which attention may be called in a few words, is that of Sir Francis Vere, one of the eminent worthies and warriors of the Elizabethan era. Sir Francis, habited in a loose gown, is recumbent on a low bed or table tomb. At each corner is a knight, in full armour, kneeling. They support on their shoulders a large table, which forms a canopy over the principal figure. On this are placed various pieces of armour, supposed to be that of the great soldier lying beneath. The treatment of this design in which the accessory figures are made to contribute so prominently to the expression, is as rare as it is effective. They evidently are secondary to the main object, and though the figures are life-size, they take their proper place simply as attendants of honour on the great general who reposes in the centre of the composition.

This chapel contains a monument by Roubiliac, which always is pointed out by the guides as one of the wonders of the Abbey. It is in memory of Mrs. Nightingale. In the lower part of the pyramidal composition, a skeleton, partially draped, issues from a dark recess or tomb, in the act of hurling a dart at a female above, who, fainting, is supported by her husband. He endeavours to ward off the fatal stroke, leaning forward and extending his hand as a shield or guard between the sinking lady and the weapon of death. The execution of this work is well worthy the great reputation of its author, and there are many points of excellence in the details of this remarkable work. The expression of the dying figure, and the action and form of the falling hand, deserve the highest praise. The poetry of this conception makes its instant appeal to the feelings. It is full of pathos and touching sentiment. But here is seen the danger of not observing the proper limits between the ideal and the real. A mere skeleton, which could not by any means be held together, is here represented with life, power, and expression, grasping an ordinary spear, with which he intends to slay his victim. The dying wife and her protector are supposed to see all this impossibility, and the husband endeavours, by a common action, to ward off the threatened evil. But a skeleton is not that broad, mysterious visitation called Death; it is simply a distressing and repulsive result of dissolution. The allegory, therefore, is both extravagant and false. With all its excellence in point of intention, and especially in its marvellous execution as a piece of marble carving, this monument offends against artistic propriety and good taste. Roubiliac is the author of another remarkable and, in many respects superior work, in the monument to the Duke of Argyll, who died in 1742. The duke is represented falling at the base of a pyramid. Around him are statues of Minerva, History, and Eloquence. The latter is full of action and expression; and, with extended arms, appears to be addressing the spectators. It is a character-

istic work of the time, and shows the great powers of Roubiliac in invention and execution; but, like almost all his works, it is utterly deficient in the repose so essential to give the proper effect to monumental works designed for a place of worship. The same criticism applies to a composition by the same master, near the Argyll monument, in the south transept, in memory of Handel, the eminent composer. The expression of rapt attention with which the great master appears to be listening to celestial music is admirably rendered, and the execution of the work is, as usual, wonderful; but the whole design is too theatrical for its destination. It is a composition more adapted to a music-hall than a church.

Scarcely any of the works after this time, however remarkable for other qualities, preserve the characteristics appropriate to church monuments. It is rare that allusion is made to death, a future state, or to the prayerful last moments of the Christian. The statues have a mere portrait character. The action of the figures have reference only to their worldly business and occupation, and the inscriptions record the virtues, the abilities, the prowess, and the accidents of life. The compositions are crowded with allegorical figures, more or less good, as they are founded on or copied from the antique. There is nothing to arrest the attention of the ordinary passer-by; and the recondite classical allusions can only be understood by the few. Such designs as those representing Mr. Thynne attacked and murdered in his carriage; of Admiral Tyrrel ascending out of the sea to heaven, while on all sides are the most preposterous accessories, including several life-size allegorical figures,—only require to be alluded to as being totally unfitted for church monuments; while they have little or no recommendations as works of sculpture.

It scarcely is necessary to multiply examples of the art that now characterised monumental sculpture. Prominent illustrations have been pointed out, by which the intelligent visitor will be able to realize for himself the leading peculiarities of the styles of the different ages. Hitherto, it is to be observed, the motive or purpose of the generality of works, however strangely expressed in some cases, has had reference to the repose of death; with suggestions of prayer and resignation; and with such accessories as are fitting, in memorials, of the kind, placed in a Christian church. Less simple, indeed, than the early Mediæval monuments, still, the later monuments continued to show the religious impulse, and invite serious reflection. In the eighteenth century this principle began to be lost sight of, and, in the end, utterly disregarded. Truthfulness and individuality were, as has been shown, first sacrificed to the absurd fancy of introducing classical details in the monuments. From ornamental the artist proceeded to personal *pseudo*-classical decoration; and we find the deceased English nobleman, statesman, or soldier, dressed in a Roman cuirass, or toga, or paludamentum, mixed up with modern costume. The large monument of Sheffield, Duke of Buckingham, before alluded to, in the chapel of Henry VII.; that of Sir Cloudesley Shovel, in a Roman cuirass, sandals, and a full-bottomed wig, in the south aisle of the nave; and many others, will show the extent to which this absurd fancy was carried. It may not be amiss to notice another class of monumental design, in which it is difficult to trace any motive. One example of this utterly unmeaning application of art,—if, indeed, it can come into the category of art at all,—is the huge monument in the Chapel of St. Paul, in memory of Lord and Lady Hunsdon. The date is about 1600. This composition, measuring between 30 ft. and 40 ft. in height, and occupying one end of the chapel, consists of various stages of merely architectural details over and around a sarcophagus; while obelisks, columns with capitals, architraves, and a variety of details, crowd the work from the pavement upwards; the most striking object being the large shield with the emblazoned coat of arms of the family. The whole has been profusely decorated and enriched with colour; now, in the course of time, sobered down to a most sombre blackness. Another unmeaning work of the kind is a military monument in the north aisle of the nave. It consists entirely of various arms used in military life, and has more the appearance of an advertising card of an armorer or accoutrement maker than a memorial or record of a deceased soldier. These works are simply referred to as belonging to our general subject. It will neither be necessary nor profitable to continue the review of such trifling and unmeaning art.

Having now rapidly reviewed the monuments preserved in Westminster Abbey, from the earliest regal monument,—that of Henry III., of the thirteenth century, down to the end of the eighteenth century,—it is not necessary to make particular remarks upon the monumental productions of a more recent time. It may merely be observed, generally, that while they often exhibit very advanced know-

ledge and technical power in sculpture, highly creditable to their authors, they are usually simply personal memorials, and have no serious ecclesiastical character or treatment to make them fitting objects to occupy places in a church. The more ambitious designs are made up of classically draped or even of nude statues, imitations of the antique. Others, expressing the views of the realistic or naturalistic school, appear dressed in the ordinary coats, waistcoats and breeches of their day. Some are represented in the full vigour of life, making speeches, brandishing swords, or calling up their troops. Some are standing, in attitudes more or less graceful, doing nothing. Some are sitting comfortably in their arm chairs, unoccupied, or, as it may be, thinking. In none of these is there the slightest idea of fitness or propriety with reference to place. Indeed, there are instances in which the extreme want of harmony with surrounding monuments and associations makes such productions not merely inappropriate, but positively offensive to good taste and feeling. They ought never to have been placed in the positions they occupy; and it is even now much to be desired that the more prominent of these statues, especially the single ones,—the most easily dealt with,—should be removed to other sites where, while the deserts of their originals may be honourably recognized, and the statues raised to their memory be seen by their admiring countrymen, they should no longer be permitted to crowd the floor of a place of worship; where the mind should be occupied with other thoughts than those likely to be suggested by such incongruous associations.

It is not intended, nor is it desirable, that works once admitted into the Abbey should be removed with anything like contumely and disrespect, simply because they do not harmonize with religious sentiment, or are out of keeping with the architecture of the church. Honourable sites might still be found for them within the sanctuary, as it were. A cloister, for example, might easily be erected, fitted to receive them, or they might be arranged within the restored Chapter-house. Many of the detached statues, especially, might so be placed with great propriety, and with distinguished effect. Many of the larger compositions, which interfere fatally with the architecture of the church, cannot, it may be feared be removed; but the floor or pavement of the church itself would thus be freed, in a great measure, from the crowding of works as inappropriate as they are obstructive.—*Builder*.

SZERELMEY'S CEMENT.

'SEEING is believing;' and if we had not seen we could not have believed in the wonderful tenacity of Colonel Szerelmey's cement for stone, bricks, iron, glass, timber, or, in fact, any solid substance, including the finger and thumb, which, in case of a small portion of the cement setting between them, must part with the skin to get quit of this, in such a case, terribly-binding agent. On Wednesday last we attended an exhibition of his wonderful inventions given by M. Szerelmey at the Albion Works, Wellington-road, Battersea-bridge, and felt much interested in what we saw. As may be expected, an inventor who invites to an exhibition, may be suspected to have everything ship-shape, and *couleur de rose* for his visitors. Colonel Szerelmey was certainly prepared for the reception of his visitors, but had evidently no disposition to hoodwink them inasmuch as they were allowed to test for themselves his wonderful products. One of the first illustrations of the power of the Zopissa cement which caught our eye was an arrangement of four blocks of Baltic timber, each four feet long and nine inches square, each weighing about a cwt. One block was laid upon the ground, and another fixed vertically by the cement to the inner end of it. The third block, parallel with the first, is fixed horizontally upon No. 2, and the fourth is fixed upright upon No. 3, the joinings being in each case effected by the cement alone, and the timbers joining end to end. We thought the 4 ft. 9 in. square block at the end of the 4 feet lever test enough, but we attached our own weight of 11½ stones to the end of the lever without in the slightest degree disturbing the arrangement of the pieces or affecting the adhesive substance. We believe that this illustration was recently put to a crucial test by three men hanging by a rope at the end of the lever, and the result was that the timber gave way, but the cement joinings remained intact. In another test we had two bricks cemented flung in the air in our presence; they came down and corners were fractured, but the cohesion continued complete. We preferred to fling them up ourselves, and only with the same result. A brick beam stood on end, the bricks, thirty in number, cemented together and resting on supports at each end of the beam, we asked that the range should be laid on edge, which was at once done; but no fracture occurred nor was any deflexion visible. In the yard we noticed a mass of brickwork, two bricks thick, and about four feet

square, which had been cut out, not for show, but in the ordinary course of the yard arrangements. The mass lay on the hand-cart as firm as a solid slab of stone, and we have no doubt that with suitable mechanical appliances, a wall four times its size could be removed from one point to another.

Colonel Szerelmey has also an indurating process of great merit. If we mistake not it has been adopted for the preservation of the Parliamentary Palace at Westminster. By this process he erects wind and water-tight houses—admirably adapted for transport from their compactness and lightness. He shows cisterns, made of paper by the way, of any capacity, perfectly water-tight, and pipes also of paper, in which the water never freezes and the pipes never burst. His inventions, or rather we should say discoveries, are well worthy of the attention not only of architects and builders, but also of the Lords of the Admiralty, inasmuch as he provides the best means of resistance we have as yet heard of to shot from the big guns now in vogue.

We took the impression from our examination of Colonel Szerelmey's works, and his products, that his inventions are of very great practical value, and we can only hope that he may realize from them what is his due as a great benefactor.—*Building News*.

GRAND CANAL COMPANY OF IRELAND.

THE half-yearly meeting of the above company was held on the 24th inst. From the report then submitted we extract the following:—In the last report we alluded to certain permissive clauses for the purchase of your Floating and Graving Docks at Ringsend, which were introduced into the Dublin Port Docks Bill. You are aware that since that time the bill has received the Royal assent. We have now to report that we are in communication with the Corporation for Preserving and Improving the Port of Dublin, with the view of selling or leasing the premises to that Corporation. The negotiations are still pending, but we hope the matter will be brought to such a successful issue that, whilst your interests and your traffic are protected, the trade of the Port of Dublin may have the full and free advantage of the accommodation which these valuable docks are capable of affording. We also mentioned that we had been obliged to take legal proceedings against the Corporation of Dublin, in protection of your right to supply water from the Canal by agreement to manufacturers within the city. In consequence of the recent legislation, adverted to below, in the Waterworks Act of this session we have discontinued these proceedings. You are, no doubt, already aware that our opposition to the Dublin Corporation Waterworks Bill was so far successful that we obtained the withdrawal of the clause to which we objected, but the committee of the House of Commons, at the instance of the brewers and distillers, introduced another clause, which, while confirming your right to supply water, enacts that such right shall be exercised through the instrumentality of the Corporation. We are of opinion that you will continue to derive a considerable revenue from the sale of the Canal water for manufacturing purposes. We informed you in our last report that we had laid the claims of the Grand Canal before the Royal Commission on railways. No report has yet been issued by the commissioners, therefore we have no knowledge of their views on the subject; but the matter has still our anxious attention. We have recently made a letting to Messrs. Guinness of a plot of ground at James's-street harbour, and of another plot at the Ringsend docks. Messrs. Guinness are erecting a store on each plot for the purpose of enabling them to carry into operation an enlarged and permanent arrangement which we have made with them for the conveyance by canal of all their export porter and other commodities between James's-street harbour and the River Liffey. From the arrangements thus made with Messrs. Guinness we expect you will receive a very considerable revenue; and, at the same time, it will confer an important benefit on the citizens of Dublin generally, by relieving the streets and thoroughfares from the inconvenience and wear and tear which must arise from the cartage through the city of so large a traffic as 50,000 tons annually.

CORRESPONDENCE.

TO THE EDITOR OF THE DUBLIN BUILDER.

SIR,—In the last half-yearly report of the directors of the Dublin Exhibition Palace, published in your last issue, I observe it stated that the three statues for the pediment of the building had just been received from W. Geefs, of Brussels. Allow me to ask, sir, through your columns, if any good reason can be assigned for giving an order of this kind to a foreigner? If the object were simply to obtain the best sculptures, surely there was no need to pass by such men as Kirk, Farrell, or Cahill among our resident sculptors, to say nothing of Irishmen who, like Foley and MacDowell, have earned a world-wide re-

putation in London. But one might naturally expect that in the decoration of a building of this kind, professedly established for the encouragement of native art and industry, native artists would have a preference. At least such is the case in other countries, and the adoption in this instance of an opposite course will tend in no small degree to lead English and foreign tourists who may visit the building to the false conclusion that artists of sufficient ability to execute these sculptures are not to be found amongst Irishmen. And what can be more calculated than such a course to disgust and drive away from us such artistic ability as we possess to seek abroad the patronage and encouragement not to be found at home? I think it much to be regretted that men of such undoubted patriotic spirit as the directors should thus act in contravention of one of the chief objects for which the institution they represent was established.

As an example of a different kind, allow me to refer to what is recorded in Mulvany's Life of Gandon, the eminent architect of the Custom House. When arrangements were being made for the sculpture of that building, efforts were made to persuade Gandon, himself an Englishman, to employ English and foreign sculptors chiefly, on the ground that no artists of sufficient ability could be found in Ireland. He was, however, deter-mined to judge for himself on the subject, and invited Edward Smith, of Dublin, to submit a model in competition with Carlini, an Italian, which resulted in the selection of Smith's design, and his extensive employment in the decoration of that noble building. As specimens of what has been done in our own day by Irish artists, I may refer to the sculpture in the pediment of the new Provincial Bank in College-street, by Mr. S. F. Lynn, whose abilities I am glad to hear are fast becoming recognized in London, and to the carving of the University Museums of Dublin and Oxford, the work of the brothers O'Shea. Some of these instances prove that Englishmen are often more ready to do "justice to Ireland" than are the Irish themselves.—Yours faithfully,
HIBERNICUS.

STATUES, MEMORIALS, ETC.

The full-sized model (14 ft. in height) for the O'Brien Memorial is completed in the studio of Mr. Thomas Farrell, R.H.A., Lower Gloucester-street. The pose of the figure is easy and graceful, the well-remembered stern countenance of the subject is well and faithfully delineated. We understand the committee have not as yet decided whether the statue will be in bronze or metal.

The statue of the late Earl of Eglinton, lately erected within the rails on the north side of St. Stephen's-green, has been unveiled. It bears the following inscription:—"Archibald William, Earl of Eglinton and Winton, K.T., Lord Lieutenant of Ireland, 1852, 1858-1859."

A meeting of the subscribers to the fund for erecting a memorial to the late Earl of Carlisle has been held in the De Grey Rooms, York. The chair was occupied by the Earl of Zetland, Lord Lieutenant of the North Riding. The secretary, Mr. W. P. Creyke, read the report by the general committee, which stated that the subscriptions received amounted to about £2,450. The expenses had been about £180, of which the largest moiety, £140, was for preliminary expenses and advertising. The most suitable site to be found was on an eminence known as Bulmer-hill, from whence a monument would be visible from the whole vale of York. Five eminent architects were asked to send in designs, and the design of Mr. Cockrell, of London, having a large majority in its favor, was accordingly selected. This design, which was submitted to the meeting, is a large Doric column, decorated at the top with wreaths, and having at the base a flight of steps, and four smaller columns, which will contain the arms of the late earl.

A statue of the Prince Consort has for some time been in preparation for the city of Glasgow, and the equestrian statue of the Queen, so long stationed at the corner of St. Vincent-place and Buchanan-street, was removed a few months since from its pedestal to be improved. These works are now about completed, and when both are ready the Albert statue will be placed on the east side of George-square, and that of the Queen will have a corresponding place allotted to it on the west side of the square. They are both to be formally unveiled about the end of next month.

Respecting the monument to O'Connell, we have little in the nature of progress, and much less in the prospect of a final settlement (a hope of which we expressed in our last issue) to report. At the meeting held on the 22nd ult., the merits of Mr. Boulger's design were pressed on the Committee by Mr. Ryan, but eventually a resolution was passed appointing a committee of thirteen to "select a suitable design." We incline to the belief that several of the gentlemen named on the committee will not act thereon.

TENDERS REQUIRED.

For dwelling-houses at Kilkeel, Co. Down, for T. G. Henry, Esq., J.P., to 6th inst.

By the Commissioners of Public Works for building a coast-guard station at Rachley, Co. Sligo, to the 15th inst.

For altering and repairing the bridge at Ennis, Co. Clare. Time extended to the 14th inst.

By the directors of the Downpatrick, Dundrum, and Newcastle Railway Company for the execution of eleven miles of railway, to 20th inst.

For warming and ventilating the quarters for serjeants and married soldiers at the Beggar's Bush Barracks, Dublin, to the 6th inst.

IRISH BUILDING NEWS.

ESTABLISHED CHURCH.

St. Columb's Church, Moville, is now completed, with the exception of a bell, for which sufficient funds have not been raised.

Two memorial windows by Messrs. Ward and Hughes, Soho, London, have been erected in the south transept of Loughinisland Church, Co. Down. One by Lieut.-Col. Forde, M.P., to the memory of his brother, Francis Forde, Esq., who died July 6th, 1850. The other by Mrs. Francis Forde, widow of the late Capt. Francis Forde, Scots Greys, to the memory of her husband, who died in 1864. The windows are similar in style, and in harmony with the chancel window, erected some years ago by Col. Forde, M.P., to the memory of his father, who died in 1856.

St. Mark's Church, Ballysillan, near Belfast, will be reopened, after enlargement under the superintendence of Messrs. Lanyon, Lynn and Lanyon, on the 2nd inst.

DISSENTING.

The Riverside Presbyterian Church, near Newry, was open on the 29th ult.

The Presbyterian Church at Fethard, County Tipperary, is now completed.

The Albert bridge Congregational Chapel, Belfast, was opened on the 22nd ult. The building was commenced in March last. It is in the Gothic style, and is capable of accommodating 500 persons.

The Primitive Wesleyan Methodist body intend to erect a new chapel, with preacher's residence, in Derry. An eligible site has been obtained on Carlisle road, one of the approaches to the new bridge. The cost of the chapel is estimated at £900.

ROMAN CATHOLIC CHURCH.

A new organ in the church of Our Lady of Refuge, Rathmines, was opened on the 28th ult. It was built by Mr. William Browne, of Camden-street, and is, we understand, a fine-toned instrument. The interior of the church has been newly painted and decorated.

GENERAL.

A new detached block of building, to be called the Drummond Wing, is about being added to the rear of the City of Dublin Hospital, consisting of spacious wards for male and female patients, with convenient latrines, wardmaids' and nurses' rooms, attached to each floor, having ample provision for light and ventilation, about 1,000 cubic feet of air being provided for each bed. The building will be of plain substantial character, executed under the direction of Mr. Charles Geoghegan, architect.

An extensive range of model dwellings, affording accommodation for about forty families, is about to be commenced in Meath-street for the Industrial Tenements Company, limited, each block of building being four stories in height, having six rooms on each floor, with convenient scullery to each dwelling in front, and provision on the landing of staircase for fresh water supply, waste water drain, and cinder shaft, affording each room-keeper the means of enjoying comfort, cleanliness, and health, at a moderate rental. A spacious laundry, drying-room, and conveniences being situated in a large common airing ground in the rear. The demand for such improved dwellings for the working classes being very great in this densely populated neighbourhood. The buildings are to be erected in grey stock brickwork relieved with red, under the direction of the company's architect, Mr. Charles Geoghegan.

Restorations and decorations are progressing at the mansion and out-offices, Newpark, Casbel, Co. Tipperary, for Joseph McCan, Esq. Messrs. Geraty and Clayton, builders; Mr. Cochrane, decorator; Mr. Charles Geoghegan, architect.

An addition, consisting of dining-room, back stairs, bed-rooms, W.C., pantries, &c., has been completed at Balteagh Glebe, near Newtownlimavady, in the Diocese of Derry, for Rev. Robert Clichester, from the designs and under the superintendence of Fitzgibbon Louch, Esq., C.E., architect, of Dublin and Londonderry; Mr. Samuel Mercer, Newtownlimavady, contractor.

The foundation-stone of a school-house attached to the Convent of St. Clare, Newry, was laid on the 24th ult. by the Rt. Rev. Dr. Leaby. The cost of the building is estimated at £3,000, of which about £1,300 is already in bands.

It is proposed to erect a town hall in the newly-formed township of Dalkey, Co. Dublin.

The Irish Society, now visiting their estates in Derry and Coleraine, have intimated their intention of building a new City Hall for Derry, entirely at their own cost. It is intended to erect the new hall on the site of the present one. They will likewise make a grant of £1,000 towards improving the waterworks.

Tullyvin corn-mill, within three miles of Cootehill, is about to be converted into a spinning-mill, under the Limited Liability Act.

Arrangements have been made for the building of a new station for the Cork and Youghal Railway at Youghal, and for the construction of the junction between the Youghal line and the Great Southern and Western.

Plans are required by the Directors of the Belfast and Ulster Brewing Company (Limited) for the erection, on the company's premises, Sandy Row, of suitable buildings. The company notify that only the plan selected will be paid for.

Various alterations are to be made at the Wexford Lunatic Asylum, near Enniscorthy, under the superintendence of Mr. Farrell, architect, Wexford.

MISCELLANEOUS.

The International Challenge Trophy has been placed in the Exhibition Palace, by consent of the Lord Lieutenant, to whose guardianship it was consigned. It consists of a tazza, supported by a lofty and highly ornamented stem, resting on a base decorated with figures, bas-reliefs, and emblems. The lid of the tazza is surmounted by a group representing the Irish King, Brian Boroihme, exhorting his soldiers to battle on the morning of Good Friday. The subjects of the figures on the base are Britannia and Hibernia—the former with spear and shield, and Minerva's helmet resting on a lion, the latter crowned with the shamrock and holding the harp of Tara, whilst the characteristic wolf dog squats at the foot. One of the bas-reliefs depicts Hibernia greeting the arrival of the English galleys to the Irish shore; the other represents a rifle match amongst modern volunteers. Trophies, encircled by the rose, thistle, and shamrock, emblems of the United Kingdom, complete the decorations of the base. It was provided by subscriptions at a cost of £1,200, and has been carried off at the July meeting at Wimbledon by Lieutenant Hopkins, one of the Irish "team."

Attention has been directed to the superiority of asphalt over the ordinary pavements of courts and passages. This latter is so irregular as to leave moist and soft interspaces, which defy all scavenging, and serve for the accumulation of all sorts of filth and refuse. It is extremely important, for the double purpose of dryness and cleanliness, that asphalt should be extensively used instead of pavement. Good, strong, well-made asphalt, on well-laid concrete, is said to be less costly than pavement, and to last a generation. In considering the means for abating the unhealthiness of towns, the claims of asphalt should be taken into account.

THE HEALTH OF DUBLIN.—In the Dublin Registration District the births registered during the week ending August 25th, amounted to 155—90 boys and 65 girls. The number in the corresponding week of last year was 194. The deaths registered during the week were 123—60 males and 63 females. In the corresponding week of last year the number was 146. Ten deaths resulted from fever. Scarletina caused two deaths. One death was referred to whooping-cough, and one to measles. A girl aged 15 years died from small-pox. She had not been vaccinated. Fifteen deaths were ascribed to cholera. Ten deaths were referred to diarrhoea. Ten children were carried off by convulsions. Nine deaths were caused by bronchitis, and three by pneumonia or inflammation of the lungs. Phthisis or pulmonary consumption caused twelve deaths. Four deaths were ascribed to apoplexy, and two to paralysis. Two deaths resulted from cancer. Four accidental deaths were registered during the week, viz.: a child, aged one year and three months, died from injury of the brain from a fall: a house-carpenter, aged fifty years, died from

"effusion of blood on brain, the result of a fall from a ladder;" a wheelwright, aged 69, died from fracture of neck of the thigh bone; and an infant, aged three days, was accidentally overlain by his mother. The Deputy-Registrar of the Donnybrook District states—"There have been seven cases of choleraic diarrhoea about Ringsend and Irishtown," and that "scarlatina still prevails in Ringsend, some of the cases being of a very malignant type; it has also appeared in Bath-avenue-place." The Deputy-Registrar of No. 3, North City District (Blackhall-street), states that "Typhus fever is on the increase in the Phibsborough District, also in North Brunswick-street and immediate neighbourhood." Thirty-five of the deaths registered during the week occurred in hospitals and other public institutions; of this number ten took place in the north Dublin and four in the South Dublin Union Workhouse. The number of deaths registered in the entire of the Dublin Registration District during the week, represents an annual ratio of 20 in every 1,000 of the population by the Census in 1861. In London the ratio was 25 in every 1,000 of the estimated number of inhabitants; in Glasgow 23; and in Edinburgh 23.

The strike of the dock labourers at Limerick has not terminated—they originally demanded 12s. a week, but they now refuse to go to work, although offered 3s. per day.

The Royal Dublin Society has, at a considerable expense, obtained, through the courtesy of Professor Simonds and the authorities of the Royal Veterinary College in London, a set of beautiful wax models illustrative of the morbid anatomy of the cattle plague, which has been placed in the society's agricultural museum. The models, which are the work of Mr. H. B. Tuson, are so graphic, that they will become standards of reference, and enable all persons to make themselves acquainted with the *post mortem* appearances of the disease. The models are open for public inspection daily from eleven to four o'clock.

Mr. Reilly, superintendent of the Belfast Fire Brigade, has invented an apparatus for cleaning the courts and alleys of that town. At the present time the Water Commissioners cannot spare water from their plugs in the streets, and, as the water-carts could not pass through many of the back lanes, it was necessary that some means should be adopted to convey the water from the carts into the narrow entries. Mr. Reilly has now got a portable pump made, which, by a suction-pipe to be set into the barrel of water and a hose, will serve to wash away nuisances, in the removal of which the scavengers' brooms in many cases make but little progress.

The works upon the weir at Templeogue are under the direction of Christopher Mulvany, Esq., C.E.

Messrs. Ward and Co., Belfast, have recently finished an admirable likeness, in oils, of the late lamented G. V. Brooke, the eminent tragedian, who perished in the ill-fated *London*. The portrait is painted upon a novel system, the sketch, as one may term it, being a photograph enlarged from a *carte-de-visite*, and taken upon sensitised canvas. The artist who finished it has succeeded in preserving the likeness wonderfully, and, at the same time, in bringing out the intellectual qualities of the head more prominently than if he had slavishly followed the photograph. The likeness has been painted for Mrs. Brooke (Miss Avonia Jones).

The gun which was dug up at Derry in laying the foundations of the new Northern Bank, and which had been presented to the Corporation of Derry by the Salters' Company previous to the Siege, has been, by the order and at the expense of the successors of the original donors, cleaned, mounted on a strong oak carriage, and placed amongst the other relics of the famous siege on the Wall. The gun, which is eight feet in length, bears the date 1642, had, doubtless, been employed in the defence of Derry against the army of King James the Second. On a panel on each side of the carriage are painted the arms of the Salters' Company, with the motto, "*Sal sapit omnia*"—"Salt gives a savour to all things."

TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

All Communications respecting the DUBLIN BUILDER, should be addressed to Mr. PETER ROE, 42, Mabbot-street, to whom all payments for Subscriptions and Advertisements must be made.

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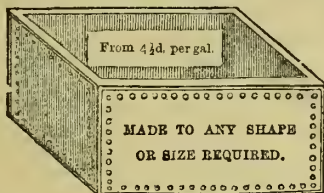
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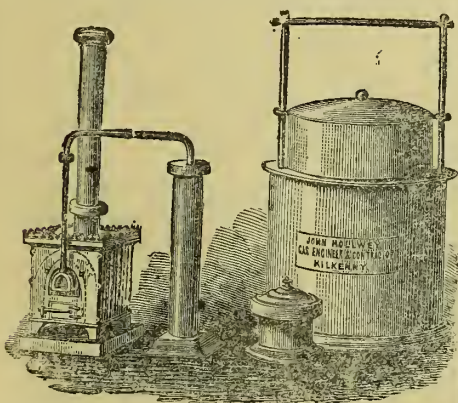


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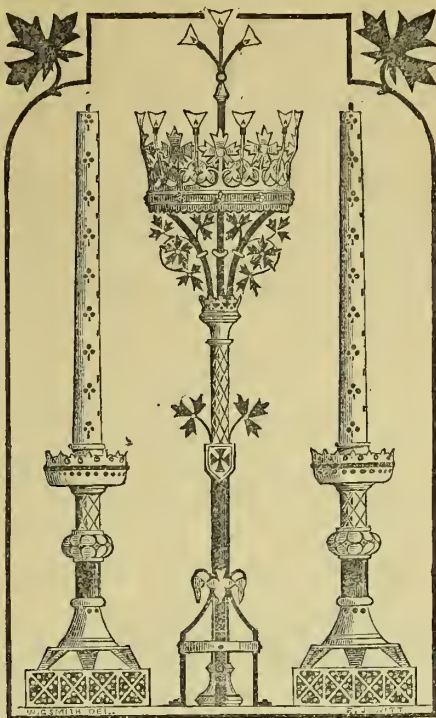
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and abroad. The great superiority of these
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They are unaffected by change of tempera-
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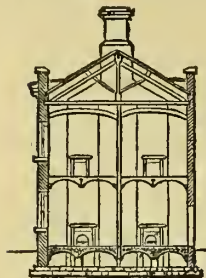
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fuel and time, as we now make one furnace do the same work two
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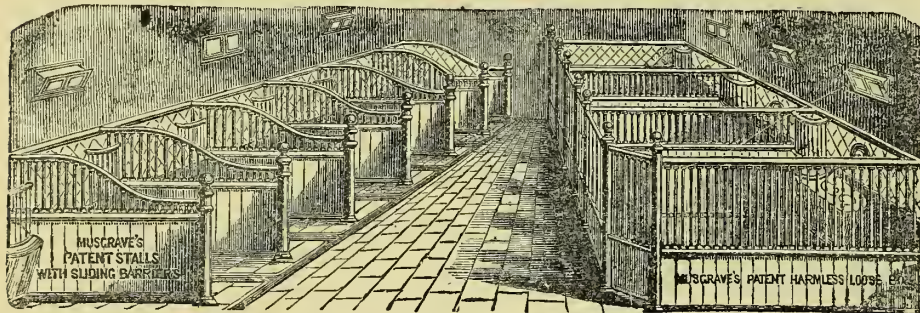
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This engraving represents the patent Stable Fittings adopted by His Royal Highness the Prince of Wales for the new Stables at Sandringham.



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SEPTEMBER 15, 1866.

1st & 15th
OF EACH MONTH.

VOL. VIII.

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ILLUSTRATION:

FARM OFFICES AND DWELLING HOUSE AT BALLINVARRIG.

BOARD OF PUBLIC WORKS. NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be received up to the hour of 12 o'clock, noon, on the 8th of OCTOBER, 1866, for ERECTING AND COMPLETING

PENAL CELLS in MOUNTJOY FEMALE

CONVICT PRISON, according to Plans and Specification to be seen on application at this Office.

Each Proposal is to be for a lump sum, and must be accompanied by a separate Detailed Estimate giving Quantities and Prices, and be endorsed "Tender for Penal Cells, Mountjoy Female Prison."

Both Tender and Detailed Estimate should bear the Name and Address of the Proposer on the back.*

Printed Forms for Tenders can be had at this Office.

N.B.—Persons Tendering should send in Testimonials as to character and competency, unless previously known to the Board.

By Order of the Board,
EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 13th September, 1866.

* If this be not attended to, the Board cannot return detailed quantities to the unsuccessful parties.

WAR DEPARTMENT CONTRACT. NOTICE TO BUILDERS.

Office of Commanding Royal Engineer in Ireland,
Dublin Castle, 5th September, 1866.

TENDERS are required for Works to be done in Warming and Ventilating the Staff Sergeants' and Soldiers' Quarters, Huts, &c., at
CHARLES FORT BARRACKS,
IN THE

CORK DISTRICT.

Persons desiring to Tender for the above Work must leave their Names at the Office of the Commanding Royal Engineer in Ireland, Dublin Castle, or at the District Royal Engineer Office, Cork Barracks, on or before Saturday, the 22nd day of September, 1866, and pay the sum of 10s. 6d. for the Bills of Quantities, which will be forwarded to each Party as soon as prepared by the Government Surveyor.

THE DOWNPATRICK, DUNDRUM AND NEWCASTLE RAILWAY.

TO CONTRACTORS.—The DIRECTORS of this Company are desirous to receive Tenders from competent parties for the EXECUTION and COMPLETION of the ABOVE LINE of RAILWAY, some eleven miles long, according to the Plans and Specifications to be seen at the Office of WILLIAM LEWIS, Esq., Engineer, Leinster Chambers, Dame-street, Dublin, on and after the 27th inst., or at the Office, 15, Waring-street, Belfast.

Tenders to be addressed "The Directors of the Downpatrick, Dundrum, and Newcastle Railway Company," and lodged at the Company's Office, Belfast, on or before the 20th SEPTEMBER, 1866.

The Directors do not bind themselves necessarily to accept the lowest or any Tender.

Dated at 15 Waring-street, Belfast,
the 15th day of August, 1866.

SILAS EVANS, Secretary.

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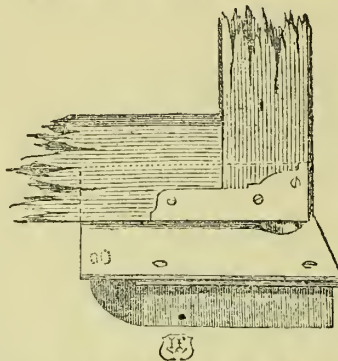
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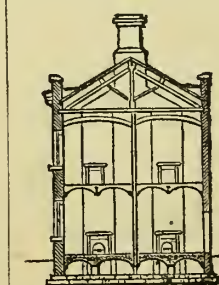
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VOL. VIII.—No. 162.

DRIFTING OR SAILING?

A LETTER FROM AN ARCHITECT ON A HOLIDAY.



DRIFTING or Sailing? which are we?—Brother in affliction at home, these lines are indited on the leaves of a sketch-book, more particularly speaking on a "Whatman's block," as you may perceive; I have "paddled my canoe," or, to be less poetical, have pushed myself out in a square vessel resembling an overgrown scullery sink (minus the waste and washer) into a lake under a pretence of sketching, but, moored among the weeds, I have forgotten to sketch, and have spent a lazy morning thinking of things in general and nothing in particular. I have been watching the clouds and their shadows passing over the hills, and lazily wondering whence they came and whither they were going, whether they were drifting as idly as myself, or whether they were freighted with some great purpose; bound for some wild storm in the mountain ravines, or carrying genial rain to some parched and thirsty pastures; and from the clouds I have wandered to things architectural. Is Architecture living or dead? Is it drifting before capricious idle winds, or is it sailing on with a definite aim and purpose that would make it worth the while of you or me or any man who would desire to have it something more than food and drink and wherewithal to be clothed, to cast in our lot with it. Since this time last year when I had such another blessed day of idleness, I believe a reflection on the present aspect or future prospect of the Great Art has never crossed my mind, no more than I believe it has yours, nor is crossing it now, galley slave that you are, chained to the labouring oar. The worry and turmoil of every day at home in the architectural mill is not conducive to the study of abstract questions. Do you know I believe my poor intellect has received an idea from the scrap of paper which an hour since was the wrapper of a sandwich whereon I have been regaling. It is an odd page or two of an old "*Architects' Journal*," a waif and stray of some dozen years of age. I find the burden of the subject-matter of all these pages is the "Battle of the Styles," "Classic v. Gothic," and so on. What has become of this time-honoured controversy? Are we only weary of it, or has the ancient bitterness of antagonism died a natural death? I find it not now in the pages of my *Builder* or *Building News*, nor yet of my *Dublin Builder*, pugnacious though this last may be. Who will hold us up the mirror? I have just been reading poor old Ruskin's last utterances, his warm and manly defence of a hardly-used gentleman, unhappily winding up however with a characteristic flourish which has the sound of the Ruskin of former days without the sense. Is the only man, who with all his honest earnest prejudices showed us to ourselves as no one else ever did, grown feeble and senile, and have we lived to see men not fit to fill his inkbottle and mend his pens, with impunity and with some share of justice sneer at a style of ex-

pression which has been contemptuously styled "Ruskinese." Good John Ruskin has told us repeatedly how we are hopelessly gone to the bad, that in this mercenary money-getting XIXth century no healthy school of Architecture can ever exist, and accordingly he has wearily and hopelessly retired from the battle and hung up his arms—leastways so he has told us. Now as regards the future of Architecture—this I mention in the strictest confidence, as I would not wish it to go abroad that I said so—I venture to disagree with Mr. R. *in toto*. I think great things of Architecture in my present holiday frame of mind. In Mr. R.'s wicked denunciations of a mercenary and money-getting-absorbed race of Britons, he has quite left out of sight, in my opinion, the vast effect which is exercised on the architectural mind by the high-pressure relaxation which is compressed into that fractional part of the year which comprises the autumn holiday—how that little leaven of repose leavens the whole prosaic lump. "*Cælum non animus mutant qui trans mare currunt*," is just a good old-fashioned lie that has had a long respectable run. Do you mean to say that you and I out on our summer's holiday are the same men that may be consulted at home at 141½ Hammer-and-Tongs Chambers any morning before two o'clock during eleven months of the year. What care I here, for instance, for old Screw who won't pay me my hard-earned fees, and causes me sleepless nights at home? Am I not a free-born Briton living in a land where lawyers and county courts flourish?—blessed institutions—between them he it. What about that scheming Scamper with his bugbear bill of extras? In imagination I see myself at home once more, flitting playfully through its pages, at once awing the pertinacious Scamper by the dignity of my manner and touching his flinty heart by the justice of my decisions. What about that big Asylum competition that I was so cruelly done out of it? Am I not justly served by getting my labour for my pains when I went into it with my eyes open to the dirty lot who had the thing in their hands. Why should its staring red walls and barbarous details destroy my peace of mind, and send me bilious and discontented each day to my office. Why should I scowl upon that poor, ignorant, empty-headed noodle, even Raddles, the author thereof. Is it a crime that he is married to the stepdaughter of the grand secretary's mother's aunt? Have I not perpetrated more hideous abominations in the way of buildings, in the dark days of my youth myself? Am I haunted here by the demons Indigestion and Bile dinning in my ears that I am to end my days in a poor-house? Nothing of the kind. But this is a wide digression from the prospects of architecture in general. This systematic holiday taking does us all good. It is not in making curious decimal measurements of the Parthenon that architectural inspiration alone is to be found. There are great ideas for us architects to be found in Alpine passes and among Irish highlands, when the imagination is lively and the heart light. How can we be whirled half over Europe among landscapes and buildings of every imaginable diversity, and continue to run in our little groove at home when we come back. Every man that is worth anything is out of a groove now. Where, by the way, is Venetio-Gothic gone to. I have not met a dear old Ducal-palace window in a new parish school-house this many a day. What particular style is our ecclesiastical architecture in just at present can you or I exactly say? I do not mean, speaking of

ecclesiastical architecture, to take note of the handiwork of Brown, Jones, Robinson and Co. in the mean and hopelessly-to-continue mean and pretentious "chapel architecture" style. I think more especially of what Street, Burgess, Pearson, and such like men are doing. If we feel puzzled about this modern development of style whether it is most influenced by our own national architecture, or founded on Early French, or impressed by the example of Venetio-Gothic, surely there are signs of a living architecture. Are not the stop-chamferers and the acrobatics dying a violent death which I may say they have compassed themselves. It is not in the highways that the evidence of art is to be found; neither in over-grown hideous railway stations or vulgar monster hotels, but in remote nooks where the thoughtful men are allowed to get their heads above water. Designs on paper only too—schemes too great and noble and grand to be appreciated by a slowly progressing public—these give one hope and courage. Surely Architecture is not drifting, but sailing bravely in spite of its adversities—whither?—who knows. And likewise whence? Is this coming school of Architecture from north, south, east, or west? I, Briton that I am, cry boldly north! The conceited soulless pedantry of the German can do us no good; the vanity, monotony, and shallowness of modern French, with all its magnitude, but little. Where it has its seat, whether in Celtic or Saxon brains, is of little account, imagination is not wanting among us, and one cannot but hope that the strong element of British common sense will in the long run enforce the adaptation of architecture to every-day wants—it is beginning to do so now—and we must yet have a new, great, and—*British* school.

But whence the object of this long homily, you will say. I have been drifting all this time to the great show of next year at Paris. Ye brother architects who do not "live at home at ease," think on this event if ye please. Remember the brave show which we made against the architects of the world at our own great fair in '63. Rise again to the occasion like men and above your petty concerns which I can so grandly despise, and let us in all friendliness see if we cannot take the shine out of these foreign fellows on their own ground. See to it at once. Cry havoc, and let loose the DUBLIN BUILDER on the lazy ones!

Your's fraternally,
The real old and original
T-SQUARE.

NOTES IN SPAIN.—V.

WE left Bilbao on a pleasant morning in the fall of the year 186—, intending to take St. Sebastian *en route* via Bayonne and Paris, having received orders at the time to go to England for a short period. Our conveyance, as far as Bayonne, was the (now) almost extinct diligence, which I shall endeavour to describe to such of your readers as have never been on the Continent. The diligence, *par excellence*, is capable of ordinarily holding about twenty-four passengers—twelve inside and as many outside. The coupe—the foremost *inside* compartment—looks forward towards the horses, with a transverse seat for holding about four persons; the after *inside* part, which is, I think, called the imperial, holds four persons *vis-à-vis* in direction with the length of the vehicle. On the outside there are five or six persons seated with Mr. Jehu, redolent with garlic and cigarillos, so much so that I would recommend any person

disliking the aroma of the cigarette, or the stronger scent of the ayo plant, not to sit behind or to leeward of the driver. The rest of the space is set apart for trunks, portmanteaux, hat-cases, carpet-bags, &c. We paid one hundred and fifty reales (thirty shillings) each for our fares to Bayonne—distance 40 leagues, or 120 miles.

A few miles from Bilbao we crossed the line of railway, which Mr. Vignoles is constructing substantially and scientifically, particularly the tunnel and the viaduct of Val-de-penas. On towards the ancient capital of Biscaye (Orduna) Mr. V. spared neither labour, time, nor expense in getting over the summit level with comparatively easy gradients—an effort that deterred many engineers but himself.

Pass close to Guercio, where the French Empress Eugenie is erecting a palace on the property of her ancestors, who were Basques—not Highlanders! as some old crone north of Tweed would fain have us believe.

Get as far as St. Sebastian ere night came on us with “wings of starry gloom.” San Sebastian possesses a population of nine or ten thousand souls. It is sheltered from the gales that sweep across the Bay of Biscay from Biarritz and the coast of Gascony. Had dinner here together with a bottle of claret for about three francs, which was an improvement upon Spanish repasts in general, not having any garlic mixed up even with the “potchero.” Took a stroll after dinner with my *compagnon de voyage*, and witnessed the effect the well-directed British fire had on the walls of this fortification during the siege that Sir Thomas Graham conducted here in 1814 with such success and indiscriminate slaughter. St. Sebastian, though a seaport on the Bay of Biscay, lies sheltered by a hill three or four hundred feet high; the ordnance embedded the stones more firmly in the face of the bastion—many of them being driven in some places nine to twelve inches deep. Any traveller who wishes to inquire into the correctness of this statement has merely to open his eyes as he passes in through the southern gate to the *Fonda del Diligencia de Nueva Union*.

Our journey thus far from Bilbao was exceedingly irksome, having to surmount the summit of the pass through the ridge of the Pyrennees; many of the relays being changed to oxen instead of the stubborn mules, it is then the ride becomes tedious if not tiresome. Were it not ever and anon that a fresh scene of grandeur would present itself, striking the imagination with delight as peak after peak of bare granite or gneiss rises its tapering head to the clouds. Amongst these majestic mountains, as we pursued our way, beheld the lordly eagle and the fearless vulture soaring aloft in the heavens, as here they were in their own undisturbed and undisputed domain.

I was amused before night fell in beholding the scene of a “festa” or gala day at Irun. Crowds of Basque peasantry—men, women, and children—were keeping holiday, guitaring and waltzing, and of course courting as well. The men wearing slouched caps of a crimson or white hue; each party, by his choice of colour, signifying his sympathy with Don Carlos or Dona Christina. The ladies, as customary, were without bonnets or anything whatever on their heads (save with a beauty of the privileged class, “aping” the French in wearing the chapeau,—an innovation I could not admire).

Anon and we bid our adieu to this highly favoured and classic land. The slopes of the Pyrennees on our right hand stretching away for miles upon miles to la belle France—literally clothed with the rich juicy and luxuriant vine. The then peaceful waters of the

“Bay of Biscay O” on our left as far as the cliffs and caves of Biarritz, where the Emperor and Empress are at present sojourning. At Behovia we come to the frontiers of Spain and cross the little river that divides the two countries, and are handed over to the tender mercies of the garde nationale of France by the garde civile of Spain.

Bayonne is about three leagues from the frontier. Put up for the night at the Hotel St. Etienne, where Mr. V.’s secretary recommended me to stop; found the people at this hotel exceedingly attentive and polite. Mons. le Commissionaire (St. Arnaud) was obliging to a fault, simply because I mentioned the governor’s name to him: this had a talismanic effect on St. Arnaud, and perhaps the prospect of four or five francs in the morning had more to do with the matter than I calculated upon.

Next morning took the omnibus to Biarritz. Biarritz owes its rise and popularity to the present ruler of France; it is situated in a sheltered cove about three miles west of Bayonne on the Bay of Biscay, and has been lately the favorite resort of Napoleon and Eugenie in the bathing season. The lodge seemed a plain substantial treeless looking building—no state or ceremony—not even a gendarme or national guard to be seen while there. The place has sprung into fashionable existence these few years. The village is remarkable for its wine-shops, *restaurants*, billiard-rooms, and *cafés*. The walks round the place, especially seawards, have been spoiled by the hand of man striving to vie with nature in making grottos and caverns; yet how feeble and puerile all these efforts are!!

I was rather amused at seeing some dozen or more adults out bathing. Men and women go into the water together in Spain as well as in France. Of course both are so disguised by bathing dresses that I could not distinguish the sex to which he or she belonged.

The city of Bayonne is worth studying as a fortification. It is not so strong naturally as Quebec or Chatham, but is built after the plans of Vauban, from whom those fortresses are copied.

Visited next day the city proper, which, if I recollect aright, is almost insulated. The park seemed neglected as far as the trimming of the walks went. This must be a noisy and gay place in the summer, as I presume all the inhabitants, including the canaille, have access to it. There was a sentry or guard when I passed in.

The country from Bayonne to Bourdeaux is quite as uninteresting as the flats of Essex and Kent along the banks of the Thames or Medway, save that it has no ditches or salt marshes to offend the eye or nasal organ.

Breakfasted at Dax “al-fresco,” under the awning of the station-house. These “landes” have a different aspect to the rest of France that I have travelled through. There are no vineyards in this part of Gascony, nor any hills or irregularities in the ground, consequently the shepherd may be observed on stilts tending or watching his flocks. The railway to Bourdeaux is almost one unbroken plain or gradient for a hundred miles or more: it is an air line as far as I could see; the works on it are very light, and little or no cuttings are observable; it is mostly an embankment raised two or three feet above the natural surface. There are scarcely any works of art worthy of notice as far as Bourdeaux. The signal stations along this line were occupied by women, who do those duties as well as men, and of course more reasonably.

Bourdeaux is a fine city. The principal

wine trade in France is carried on in this place. There is a large iron bridge, on the lattice principle, over the Garonne here. Pass by the regal cities of Angouleme, Poitiers, Tours, Blois, and Orleans to Paris. The country along the route presented a marked difference to England, there being no green lanes or hedge rows, and in all cases the vineyards were unenclosed and without fences. The lands along the valleys of the Cher and Loire seemed to me to be excellent pasture, and were teeming with “milk and honey.” Got to the terminus of the *Chemin de Fer du Midi* in about twenty hours—not bad travelling on a French railway,—and put up for a day or two at the Hotel de Lisle et d’Albion, Rue St. Honoré, of which more anon.

Dundalk, 6th Sept., 1866.

(To be continued).

THE VARTRY PIPES—THE TAPS.

THE bursting of one of the large pipes for the new water supply called forth an animated and lengthened discussion, at a special meeting of our Municipal Council on Wednesday last. The chairman of the Waterworks Committee was called on for a more satisfactory explanation of the matter than had been given by the City Engineer. A member expressed his opinion that many other pipes would burst. The chairman then commenced his explanation by admitting that he was certain some more would go. There never was a pipe line of the kind laid down yet that a large number of the pipes did not go. That was the experience of water pipes in all places where they were used, and they could not expect their experience would be different. A number of the Loch Katrine pipes gave way. Gas pipes frequently gave way, wheels came off carriages, guns and pistols burst, and they could not expect that in their pipe line there would be no such cases. The facts with regard to the pipe in question, were these—The line of pipe at that place to the next relieving tank was about 6½ miles in length; pipes of a different character were so placed on line as to have their strength proportioned to the amount of pressure they would have to bear, the pipes which would bear the largest pressure being the last. The pipe that burst had at the time a pressure on it of about 140 feet. On making an examination they found there was an old crack, and the pressure of the water having searched out the weak point, it gave way at this crack. He went to see the thing himself, and he was able to state that it was incorrect to represent that any damage had been done. The ground had to be opened, of course, for some twelve or fourteen feet, for the purpose of removing and replacing the broken pipe. The crack which led to the bursting very likely occurred in this way:—the pipes, before they left the foundry, were subjected to twice the pressure which they would have to bear. That pipe was tested, and stood the test, but it was tested in Glasgow, and not in Dublin. The pipe had to be taken to the quay and put on board ship, and brought over; it had to be taken out of the ship, put on a dray, transferred to the railway, and from the railway truck again to the dray, taken down and laid in its place. In all these shiftings it may have struck against a somewhat stronger pipe and cracked. The crack did not extend all the way through so as to be perceived. The pressure was 65 pounds to the square inch, but there were pipes which were subjected to a pressure equal to 120 pounds to the square inch, and stood the test. The accident would not cost the citizens one shilling. The contractor was bound not only to repair the pipes, but all damage that might be done. He was bound to keep them in order for twelve months after they were in operation.

In reply to Mr. Whelan, Sir John Gray stated the thickness of the pipes varied from 1¼ inch to ¾, according to the pressure to which they would be subjected.

Mr. French said there was no pressure worth mentioning on the pipe that burst. There was not a pressure of 60 of head water.

Sir John Gray said it was not subjected to a pressure of 60, but of 145 of head water. It did not go until the pressure reached that.

Dr. Ryan wished to ask whether supposing pipes burst at a distance from the reservoirs there would be a means of communicating at once so as to have the water stopped?

Sir John Gray replied that the committee had made arrangements to have put up the means of telegraphic communication, so that upon the slightest indication of an accident they could at once have the valves shut, and the supply stopped. Not

only that, but they would have the means of communication from each of the relieving tanks, so that if at any point an accident occurred they could communicate from each tank to the city what had happened, and receive back directions how to act. They could communicate at any time of the day to their inspector, who was bound to be always on the spot attending to his business.

THE WATER SUPPLY FITTINGS.

The Town Clerk read the following resolution, of which notice had been given:—

"That the Waterworks Committee be empowered to frame regulations and orders fixing and determining from time to time the several classes of fittings that will be allowed to be used, and required to be adopted, by the several consumers of water under the several Water Acts now in force, and that they do proceed forthwith to frame such regulations as they may deem most expedient for the public service, and the most convenient to the consumers."

Sir John Gray said the motion would be better understood by the council if they allowed a short report, prepared by the committee on the subject, to be read. (The report was read.) The Waterworks Act (1866) gave power to the Corporation to direct that any kind of fittings which they thought best shall be adopted by any person who received water supply from the Corporation. The power so given to the Corporation could only be effectively carried out by the Waterworks Committee making a careful examination of all classes of fittings best suited to the new water supply. Though the committee would not be exceeding their authority by selecting the fittings themselves, they preferred not recommending any. A strong feeling existed in the minds of the members of the committee that all the brass-work (which in the aggregate would cost a considerable sum, and form a large employment fund) should be executed in the city, and our own mechanics thus have the advantage of the work for which eventually they would have to pay their share as ratepayers. Three or four Dublin houses had sent in specimens of taps identical in all respects with the tap of Guest and Chirnes. Whether the taps sent in by the Dublin houses were made in town he could not possibly affirm, but the fact that the home houses had sent in these taps he took to be a sufficient vindication that they can supply the taps of home manufacture, and at the prices affixed. The Dublin houses who sent in the specimens of taps were Edmundson and Co., Capel-street; Curtis and Sons, Chancery-lane, and Maguire and Son, Dawson-street. The specimens were on the table, the list of prices had been given, and he supposed they might assume that the Dublin houses were in a position to supply the taps to such parties as might wish to have them. Guest and Chirnes' price for taps (half inch) was £1 8s. per dozen; Underhay, of London, 3s. 5d. each; Warner and Sons, London, 2s. 4d. each; Curtis and Sons, Chancery-lane, £1 3s. per dozen, if taken in large quantities; Maguire and Son, Dawson-street, £1 10s. per dozen, taken in large quantities; Lambert and Son, London, £1 13s. per dozen. One thing the committee would propose was, that no tap shall be used anywhere in the city except the tap having the Corporation stamp. An officer would be appointed to examine the taps offered for sale, and see that they were properly manufactured. They would then be stamped with the Corporation stamp. There was one essential also which the committee were rigid about, and which he was sure the council would with equal rigidity insist upon, and that was that the "screw tap" which allowed the water to be not suddenly but gradually stopped without any shock or danger. Probably some members of the council were not aware that water brought a long distance was as costly as manufactured gas, gallon for gallon. The water of Liverpool, of Manchester, of Glasgow—the water of other cities—carried a considerable distance by the mere cost of carriage, that is the cost of the construction of works for collecting and storing, and this carrying the water by pipes to the city was dearer than the gas supplied to the consumer in the manufactured shape, gallon by gallon. Having regard to that fact, it was essential that, while giving an ample supply of water to every inhabitant, they should protect the general body of the citizens from the waste of water by parties through carelessness or accident. The committee would probably ask the council to sanction a system by which there would be no overflow or waste pipes at all, and that every person would have the advantage of a proper cistern somewhere in his house. Under the present system every house having gas was supplied through a meter, but outside the meter was a main tap by which the gas could be shut off completely from the meter and the house. It was proposed to have in the same way an external tap, at which the water could be altogether turned off from the house. It would be in such a position that if from the shock of the pressure, or from negligence or bad plugging, any accident occurred, the persons in the house would know where to run at once and shut off the

supply of water in time, and until the requisite repairs were executed. If the council gave them authority to frame a code of laws which would apply to all classes of houses, they would be framed in such a way that every person would know from a printed paper in his hand what he would have to do. Everything that could be done would be done on the part of the Corporation to set every person right, and if anything was found to be oppressive or disagreeable in the regulations it would be struck out. He might state that the tunnel was just cut through, with the exception of one plug retainer for the purpose of drainage, and probably by next week the water would be allowed to run through. The water was rapidly accumulating in the reservoir; they would find a lake a mile and a half long in some places, varying from three to half a mile wide, and immediately at the bank 28 feet deep.

Mr. Whelan asked if the taps exhibited on the table were the taps sent in?

Sir John Gray said these were the taps recommended for adoption.

Alderman Gregg would suggest that the committee should have an officer who, when the new supply was about to be laid on, should inspect the water fittings in each house, see that the material was good and the work well done.

Sir John Gray said that the suggestion of Alderman Gregg, if carried out, would be found very convenient for one class of persons and excessively inconvenient for another. It would be too much to place upon the eight or ten gentlemen who virtually did the business of the Waterworks Committee, the responsibility of the work done by every workman in relation to the water fittings in every house. All they could do was to give advice and suggestions to the public, and, if necessary, to name establishments in which the public would have confidence. An effort had been made to get up a cry that the Varty water would act injuriously upon lead. No doubt every soft and still water would act upon brightened lead, and the purer the water the greater the action. To meet this they adopted a rule that no new lead should be allowed to be used except a lead with a certain alloy of tin, upon which still water would not act. The Mining Company of Ireland had prepared specimens and stamped their name upon them, and they had ordered it to be made of sufficient strength according to the pressure it would be required to bear.

Mr. Norwood said great inconvenience was caused in London by the water companies allowing the water to be supplied only for a short time. He wished to know would that system he followed in Dublin, or would the supply of water be continuous?

Sir John Gray said it was the intention of the committee, and the arrangements had been made, to have a constant supply.

In reply to Mr. French,

Sir John Gray said it would be very difficult for the committee to guarantee that every tap made was of home manufacture. Suppose a house calling itself an Irish house sent in a sample that was not Irish work, how could that be selected? The committee had taken the greatest pains to have every tap of Irish manufacture, and intended that no tap without the Corporation stamp should be used. The Waterworks Committee had a complete and perfect record of the state of every house in the city, as to the condition of its present fittings and appliances for water supply. Any householder who made the inquiry at the City Hall could be instructed as to the condition of his house in that respect.

Messrs. Curtis and Sons, of this city (one of the firms whose specimens of taps and fittings have been approved of by the Waterworks Committee), write as follows:—

"Referring to the report of the proceedings of the Corporation about the taps for the new waterworks, we think it right to state, as practical and manufacturing brassfounders, that the patterns sent in by us and approved of by them were manufactured in our works in Chancery-lane. We have for years past given this branch of our business particular attention, and have successfully competed with English manufacturers. In various places in Ireland taps of our manufacture are in use by several waterworks companies. We can with confidence refer to those used in Cork both by the Corporation Waterworks and all the respectable plumbers there as having for several years stood the best test, that of extraordinary high pressure, and within the past few months we have made a quantity of the same pattern as those now selected by the Corporation for the Pembroke Township, and also a large number of brass ferrules for the mains for the contractors—Messrs. T. Edington and Sons.

"Seeing, then, that these taps can be manufactured in Dublin, and that, too, of the best quality and at a lower price than by the English houses, whose prices were publicly mentioned by Sir John Gray, we feel confident that the Corporation will see the justice of giving to the trade of this city the preference of supplying the taps, ferrules, &c., required for these waterworks.

In accordance with the suggestion that the manufacture of these taps should be open to inspection, we shall always be happy to show those articles in process of making at our works. We may add, that since we sent in these patterns to the Corporation, nearly two years ago, our facilities for manufacturing have been greatly increased, we having purchased the premises of the Dublin Metal Works Company, 93, Middle Abbey-street."

NEW ASSEMBLY ROOMS, BALLYMONEY, COUNTY ANTRIM.

THE spirit of progress, which is now working such wondrous changes in the northern metropolis, is, as might be surmised, happily extending its influence to most of the county towns within easy reach of it. Here and about are on every side evidences which show how well directed industry promotes the welfare of a district and of a country; here are those evidences of thrift and comfort, witnessed in the most thriving counties of the sister island; evidences, too, how contrastive, with those of the southern and western provinces, where, with very few exceptions, discontented sloth, fostering an incapable sedition, is acting suicidally as a scarecrow, a threadbare one, to Ireland's friends—English capitalists.

Of those towns which, as a group, form the one bright spot in this country, Ballymoney is not the least progressive. Amongst its recent improvements the new Assembly-hall is worthy of the best place; a structure which for beauty, suitability, and convenience is much admired.

This building is intended for the accommodation of large public meetings, and to serve as a shelter for some useful institutions which have heretofore been in want of a suitable habitation. It is one of the few successful results of competition designing, and alike reflects credit on the taste and skill of the architect and the discrimination of the committee; the design was unanimously selected from a limited number submitted on invitation, and proved to be the production of William Gray, Esq., architect, Belfast.

The rooms were opened on Tuesday, 28th August ult., with a grand bazaar and promenade, by the Earl of Antrim, who kindly granted a lease of the site at a merely nominal rent. The building occupies a pretty, elevated position, being situated at the head of High-street, and viewed from Main-street presents a conspicuous and attractive addition to the other prominent buildings in this part of the town. The design is in character Lombardo-Gothic, a style now very popular, and commendable ingenuity has been exercised in the economic use of local materials as far as practicable; the whole is executed in real honest material, all appearance of sham being carefully avoided, and the result, as it ought to be, is satisfactory. It is constructed of red brick walling of excellent quality on a solid masonry base of the local trap rock; the strings, which occurring at intervals relieve the facing from monotony, and alternate voussoirs of the arches, the latter moulded, over the doors and windows, are of Paisley white brick. The cornice at the eave is constructed of moulded brick and cut-stone; a cut-stone flush band runs round the building at the springing of the upper arches, and stone disengaged columns with elaborately carved caps and ornamentally sunk springers, enrich the entrance doorway, the central window, and the triplet window at the end next the town; a pretty, deeply recessed circular window, filled with ornamentally pierced plate tracery, serves to fill the gable at each end. The line of the front is broken symmetrically by the projection of the entrance to a slight extent; this projection is carried up a few feet beyond the main cornice, and, with its high pitched roof surmounted by a ventilator turret with spirelet and ornamented dormer on each face, forms an effective tower-like centre to the composition. The roof of the building, of moderate pitch, is ornamentally slated, and relieved by dormers, the gables of which, with all principal points in the roof, are enriched by iron finials of various pattern, and the ridge is furnished with a suitable metal cresting.

The accommodation consists of:—On the principal floor, which is reached from the hall by a wide solid flight of steps, is the principal assembly-room, 60 ft. by 29 ft. and 23 feet high, capable of being used as a concert-room, ball-room, or lecture-room. A lecturer's-room at one end, to which there is a separate entrance in direct communication with the keeper's apartments as well as with the large room, and a gallery furnishes accommodation for a hand when occasion requires; neither of these provisions encroaching on the room itself, which is open, spacious, and lofty, and well lighted for day or night, admirably ventilated, and will accommodate 350 persons. On the ground floor a spacious main hall is entered through a recessed porch, the floor of which is laid with Maw's ornamental tiles; from the hall are immediately opened the commissioners'-room, 30 ft. by 20 ft., having a projecting bay window; the reading-room, 20 ft. by 17 ft.; the library, 19 ft. by 11 ft.; and the keeper's apartments, which are so arranged as to admit of ready communication with any part of the house. In the chief assembly-room the principal timbers of the roof are exposed, stop chamfered, and varnished, and spring from carved stone corbels in the side walls. The coved ceiling springs from an enriched cornice along both sides of the room. Above the principal ceiling a range of ventilators, from which the gaslights are suspended, runs down each side of an elevated coving, so affording vertical exit for foul and heated air, ventilation being thus secured without

perceptible draught. The decorative effect throughout is produced rather by a judicious disposal of constructive features than by the customary insertion of useless and costly so-called ornaments.

Much credit is due to the contractor, Mr. W. Young, for the satisfactory manner in which the work has been performed. The building has been, in the true sense, most economically designed. The cost has been about £1,800, which is surprisingly low for the accommodation afforded.

THE ROYAL OBSERVATORY.

For some time past Mr. John Brownrigg, a gentleman well-known in scientific circles, has been erecting, under the supervision of the Astronomer Royal and Mr. Glaisher, a new set of instruments for registering the speed and pressure of the wind. As the instruments are both near completion, and are indeed in operation, a description of them cannot be read without interest.

The first, for registering the force of wind, consists of a circular plate of metal of a diameter equal to two square feet in area, supported by eight tempered steel springs. When the wind impinges on the circular plate the springs are brought consecutively into action, the stronger coming into play before the weaker have received any strain. The plate is kept constantly facing the wind by means of a direction vane. From the plate a fine flexible wire is carried down through a hollow pillar which supports the vane, the whole apparatus being in a room below. The wire governs the motion of a pencil, which is made to traverse a table covered with slate, on which is strained a sheet of paper, marked with the hours. This table is moved by clockwork, and the pencil being regulated by the pressure-plate registers on the paper the pressure of the wind during every portion of the twenty-four hours. The instrument, which is capable of registering as light a pressure as even two or three ounces on the square foot, will in strong gales have to withstand a force of 40lb. to the square foot.

The next instrument is for the purpose of registering the velocity of the wind. This consists essentially of four hollow hemispherical cups attached by arms to a central spindle. These keep revolving at one-third of the velocity of the wind. The motion of the spindle is reduced by a train of wheelwork, and the register is by indices on graduated circles, showing respectively tenths of a mile, miles, tens of miles, and hundreds of miles; one of the wheels has a rackwork motion attached to it, which communicates by means of a rod with a pencil inside another room. This pencil is carried over a paper strained by a cylinder. The paper is marked with the hours, and the pencil registers automatically and continuously the velocity of the wind during both day and night. The velocity at Greenwich has never exceeded 800 miles in the twenty-four hours, but at Liverpool greater speeds have been registered.

It may be added that it is intended eventually to prepare a new set of tables showing what velocities are usually prevalent during the currency of certain pressures, and *vice versa*.

OLD POTTERY.

It has been found that on an average the price of articles of vertu doubles at public sales every five years, with this restriction, that public favour shifts from one subject to another; sometimes it lights upon pictures, which then fetch enormous prices, at others it will patronise enamels on metal, or carved wood, or jewels. At present, says a writer in the *Revue Française*, pottery is in vogue; a plate broken in two has been known to fetch 15,000*fr.*, an old candlestick has been knocked down at 25,000*fr.*, and a relic of Henry the Second's reign at 50,000*fr.* The reason of this is, that pottery bears unmistakable authenticity on its face; it is impossible to imitate it so as to deceive the eye of a practised amateur. Carved ivory can be imitated with the greatest ease; wrought iron articles are manufactured at Paris as well as in Italy and Germany. Whole suits of armour, spick and span new but last year, are sold this year as the rusty remnants of the middle ages, with many a dint from battle axe and spear upon them. The Belgians are famous for their imitative propensities; they buy up old worm-eaten boards and transform them into the inlaid furniture of our forefathers. Enormous quantities of ancient jewellery (whether Grecian, Roman, Etruscan, or French makes no difference) are annually put into circulation by 20 or 30 workshops which have no other ostensible means of existence but that of tricking the public. But the ceramic arts bid defiance to all attempts of the kind. Among the specimens which are most in demand, and yet seldom seen, are the bricks of the Tower of Babel, part of which are painted and glazed. Next in order are those beautiful Greek and Etruscan vases, so tastefully ornamented in endless variety, and

which, notwithstanding their fragility, have come down to us through ages of convulsion and destruction. Then follow Hispano-Arabian and Persian pottery, majolica (a corruption of Majorca, where the art was cultivated on a large scale from the beginning of the 13th century), Italian ware, the best of which is by Luca della Robbia, and last, though not least, the beautiful specimens of Bernard de Palissy.

FARM OFFICES AND DWELLING HOUSE AT BALLINVARRY.

IN this number we engrave plans of Farm Offices and Dwelling-house erected by Major Henry Alcock, of Wilton Castle, Co. Wexford, in competition for the Challenge Cup offered by the Royal Agricultural Society of Ireland, and presented by Lord Talbot de Malahide. The judges appointed to examine and report on these buildings state that "The conditions appear to have been fulfilled; for though the farm for which the house and farm buildings have been erected will contain 225 Irish acres, and will set probably much above £150 a year, yet at present it is valued at £115 5*s.* in the Tenement Valuation. The farm-yard appears to be well situated, and the arrangements suitable for a properly-conducted tillage farm. There is a good barn, with straw-house. The position of the turnip yard is convenient for the feeding-houses which contain excellent accommodation for 36 head of cattle. There is stabling for 8 horses, a large cart or implement shed, and a car-house; also a boiler and dairy: the latter, we think, should be nearer to the farm-house. There is a large enclosed manure-pit in the centre of the yard, into which the liquid manure from feeding-houses and stables is conducted, but no central tank or other receptacle has yet been provided to prevent these drains from being closed by the manure at the mouth, or to allow of their being flushed for the removal of sediment. This, however, we have no doubt will be done. A roadway for the purpose of the farm passes through the yard, and by closing the gates at each end the farm-yard is made secure. The buildings forming or in the farm-yard are about 400 feet in length, and they have been erected at an expense of about £700, which is nearly 3*s.* per running foot. The dwelling-house has a good aspect, and is well suited for a (superior class of) farmer holding the extent of land mentioned. It contains two living-rooms, a store-room, and a lofty kitchen on the ground floor, and on the bedroom floor four rooms. The entrance-door is sheltered from the prevailing winds by its position; but a door contemplated in the hall at the top of the step going down to the level of the kitchen will be advantageous, in preventing a draught between front and back doors."

Total cost of Farm Offices,	£717	13	3
" Dwelling-house	472	1	2

INVENTORS AND INVENTIONS.

AT the recent meeting of the British Association held in Nottingham, Mr. G. B. Galloway read a paper on the above subject, from which we extract the following:—

Here in this ancient town of Nottingham, converging centre of much commercial manufacture, birth-place of as great an inventor as ever lived, I would say in this our age,—I mean the late Samuel Hall, the father of steam-surface condensation, and many other valuable inventions,—would I seek to promote a better state of things, so that inventors may at least *live* by their talents, and see in their *lifetime* that their inventions are appreciated. James Watt, the father of steam engines, struggled for nearly nine years mending and making surgical instruments in a small shop in Glasgow before he was appreciated, or as a practical man known. The late George Stephenson, my good old master, whom I worked for when a boy at *canny* Newcastle, took out several patents, struggled on for many years, had his house burnt down, lost his all; and as he said to his wife Fanny, 'I say, lass, I cannot afford to pay the coach to Darlington, so I mun just take shaukie naggie

(that was a stick in his hand), and I'll get there somehow.' Well, he got there, and met with George Pease, and we see the result; and who, I ask, can fully estimate it? Take others—as many as you please. Get Smiles's works, and read them with attention; his industrial biographies,—his 'Lives of the Engineers,' 'study the mottoes' in the books, and you will find in every age the 'most valuable men' have been neglected. But let me come nearer still. Take the practical life of Mr. Henry Bessemer, whose invention has now reduced 'steel' in price from £50 to £13 per ton, and so saved—and will save—millions of pounds sterling, whose genius has enriched many a family, given work to thousands of men. He himself may tell you how, just like George Stephenson, until he at last found friends, he did not succeed. I suggest that the balance of the money which honestly belongs to the inventive class, amounting now to £100,000, above the expenses of the patent offices and machinery connected therewith, should be applied as the foundation of a fund to develop practical inventions, and let the results of such experiments from approved inventions be published as they are completed, and let inventions be proportionably paid or rewarded in accordance with the value of their plans. I would further suggest that the Government of England should equitably reward or pay inventors for the plans which have been by them supplied and adopted by the Admiralty, and that the Government should provide for the descendants of such men as Samuel Hall, who spend their lives and property in the promotion of plans which confer such commercial advantages."

SUNLIGHT.

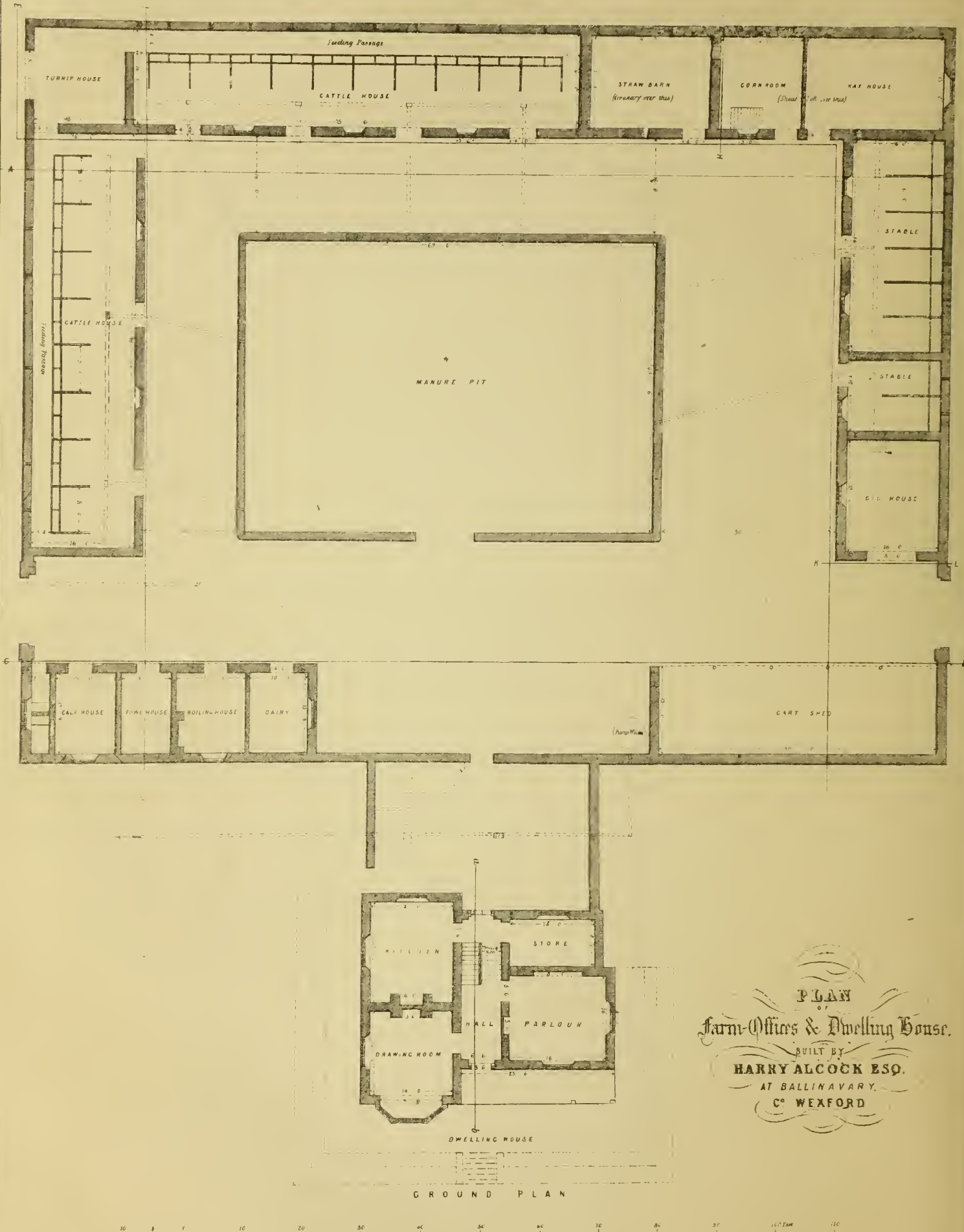
IN a letter addressed to the French Academy of Sciences Father Secchi, of Rome, describes certain experiments of his for ascertaining the relative intensities of light at the centre and near the limb of the solar disc. The first experiment, which consisted of projecting the image of the sun on a white screen by means of a diagonal cye-piece, which received the image through a 6-in. object glass, revealed a considerable difference of intensity at the centre compared with that at the limb. A second image was then obtained by a modification of the arrangement of the apparatus. The most superficial comparison of the intensities of the two projections at once rendered the difference perfectly evident; and, moreover, the light proceeding from the limb might be perceived to have a peculiar reddish, smoky tint, while the light from the centre was perfectly white. By means of the revolving photometer Prof. Secchi ultimately fixed the proportion of the light emitted from the centre of the solar disc at four times that of a point only fifty seconds distant from the limb. From that point the intensity decreases so fast that at a distance of only five or six seconds from the limb it is scarcely one-twentieth of that of the centre.

THE "ARTFUL DODGER" TO AN AUDIENCE.

Its all serene, 'twere better to retreat
Than get night's lodging here in College-street.
Sweet classic ground! where muddy water gushes,
'Neath great Sir Philip's pelicans and rushes,
Where College Kitchen chimney smoke ascends,
And Tommy's statue so intently bends,
Noting the hours when omnibuses pass,
For Rathmines, Roundtown, and for Balinglass!
Charming to turn from such rum piece of work,
To gaze on Goldsmith! who with Edmund Burke,
When finished quite, by tasteful Foley's art,
Will make the front of *Alma Mater* smart,
"Streets of the World!" I often wonder when
Will Sackville-street engage great *Salut*'s pen;
Worthy thy muse, and of thy genius rare,
Oh, George Augustus, is that thoroughfare.
Its *Nelson Column*, its *Post Office* stately—
Its *Gresham*, which has been re-modelled lately;
With *Prince of Wales*, and *Bilton*, smug fellows,
Chuck-full, just now, of tourist English swells.
Then take the hint, quick-witted as you are,
And just pop Sackville-street in *Temple Bar*.
Long may your public boards in Dublin thrive—
Long may improvements keep your trade alive.
Ere my next visit giant pipes laid down,
Will carry Vartry water through the town,
For mixing grog, in all creation round,
Such whiskey and such water won't be found.
Ballast keeps steady, *Gas* may bid defiance
To competition, by a wise *Alliance*.
The companies have ascertained at length,
That in their business, union may be strength.
In flagging, to improve Eblana's beauty,
Your civic Board don't seem to flag in duty.

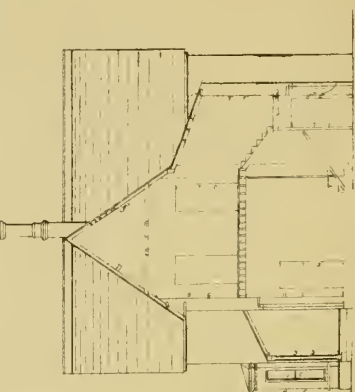
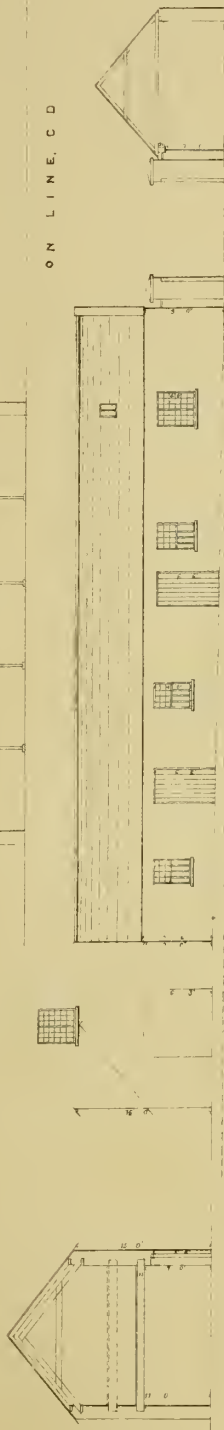
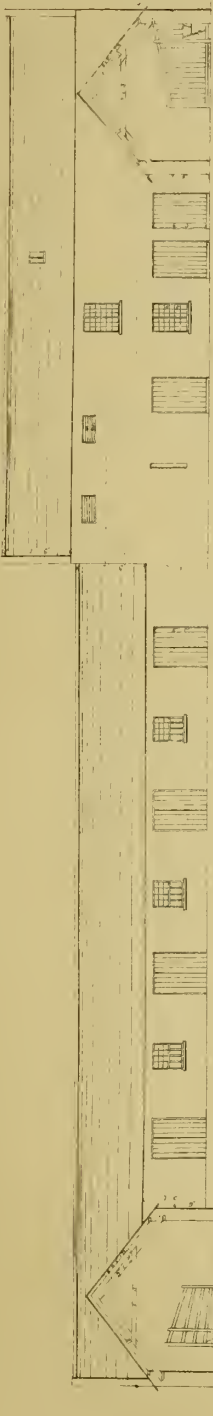
The Royal Exhibitions to the Royal School of Mines, Jermyn-street, London, and the Government School of Science, Dublin, consisting of £50 a-year for three years, and free admission to the respective schools, have been awarded as follows: those to the Royal School of Mines to German Green, aged fourteen, monitor at the Lower Islington Public School, and Frederick J. M. Page, son of a carriage-builder, London. Those to the School of Science have been gained by C. G. Stewart, aged sixteen, chemist, London, and J. McAllan, aged twenty-two, chemist's assistant, Dublin; and S. Williamson, jun., student of the Royal College of Chemistry, London.

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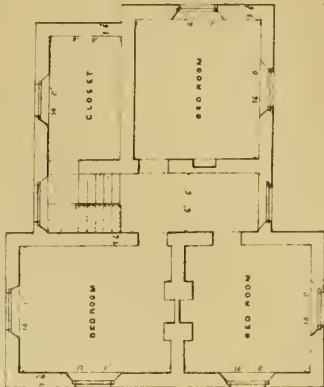


PLAN
OF
Farm-Office & Dwelling House.
BUILT BY
HARRY ALCOCK ESQ.
AT BALLINAVARY,
CO. WEXFORD

ELEVATIONS



DWELLING HOUSE



Scale



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LAKE DWELLINGS.*

WHEN the first discovery of a lake dwelling was made, scarcely twelve years ago, few persons would have guessed that it was the clue to such important additions to our knowledge of the history of man as it has since proved to be. It has, however, led to the certainty that nearly every lake in Switzerland and the surrounding territory was the site of similar settlements; and this fact, taken in connexion with the existence of lake dwellings in Scotland and Ireland, points to a period when Europe was peopled by tribes thus living upon the face of the waters. It cannot, notwithstanding, be said to have taught us so much as we have yet to learn concerning them. Like every other acquisition in the way of knowledge, the discovery has shown us how little we really know. We can, by its means, realise the pile-formed platforms rising out of the waters, with their villages of huts built upon them; the scented forests upon the pleasant shores whence the settlers procured their timber; the implements with which they felled it; the indomitable powers of battling with means by which with such poor appliances large works were carried out; the busy comings to and fro as the colonists went hunting or foraging; the sunny summer days spent in fishing; the autumnal nuttings; the determined industry that set them to make pottery with their hands, and weave rough textile fabrics,—powers of adaptation in the clever adjustment of rude means to required ends, that prove them to have been no unworthy predecessors; but these realizations throw no light upon the direction whence these tribes arrived in the first instance, nor upon that of their dispersion; and, curiously, no tumuli, nor other burying places, have yet been found in the neighbourhood of any lake settlement, to indicate the manner in which they disposed of their dead. Whence they came and where they went, the date of their first formation of these water-dwellings, and of their last occupation of them have yet to be ascertained.

It says not a little for the zeal and industry of Swiss savans that so many examinations have been made, so many relics properly preserved, and so much information diffused on the subject. It says, too, not a little for the admirable reticence of the antiquaries in question, that they hazard no conjectures, start no unripe theories, but content themselves with collecting facts, and awaiting the gradual revelation of this dim historic page. There is scarcely a museum in Switzerland without a collection of relics from the newly-formed lake dwellings, nor, we are told, a native of their locality, who is unacquainted with the nature of the recent discoveries and of their bearings on the history of man.

The quantity of relics found is surprising. Dr. Keller tells of two boat-loads of broken pottery being gathered together speedily at one spot, and of hundredweights of bones being carted away at another. It is not always, however, that such large acquisitions are made. Mr. Lee relates the ordinary modes of operation, when the piles are still under water, to consist of picking up the relics, many of which lie upon the surface of the bed of the lake, with a long pair of forceps fixed to the end of a pole; or, when they are buried in the mud, of scraping a quantity of this into a heap and then raising it and examining it. In the instances where the piles are no longer under water, excavations only are required, and the progress of a railway has enabled the antiquaries occasionally to avail themselves of a steam mud-engine. The broken condition in which this engine deposited the relics within reach neutralized the advantage that might have been obtained from the scale of its operations. The stumps of the piles, too, present obstacles, and prevent any very rapid examination; consequently when we look at the quantity of relics accumulated, we must think of the industry and perseverance of the collectors, rather than of the wonderful fact that these traces of human residence should have been so numerous and lain so long unperceived. Stone hammers, stone celts, stone awls, stone chisels, sling-stones, and grindstones; flint arrow-heads, flint harpoons, flint saws, flint knives; bone fishing implements, knives, awls, chisels, hammer-heads, arrow-heads, lances, beads, hairpins, needles, all made of bone; the teeth and tusks of wild boars made into needles and fish-hooks—what shifts and thrift are thus mutely impressed upon us! Highland tourists are sometimes astonished at the number of objects that the Highlanders can make out of stags' horns; but they would transfer their wonderment if they examined the objects picked out of the lakes which the pioneers of civilization made out of the same material. Barbed harpoons, agricultural implements, hammers, hatchets and hatchet-hammers, hafts or handles to various tools, drinking-vessels, heads, ornaments, and hairpins made of stags' horn have been found in many of the settlements.

It is not a little singular that the existence of the remains of so many dwellings should have been un-

known so long. In places most frequented by fishermen, where barks are constantly stationed and boats continually passing to and fro, with piles standing up out of the bed of the lake in such inconvenient profusion that they have sometimes been taken up, these vestiges have been unnoticed till the first discovery at Meilen caused people to look into the waters with different eyes. Then the fragments of strange pottery were accounted for, and the stones of peculiar forms were ascertained to be the result of human fashioning. But this may also be said of many other secrets that the dry land, as well as the waters, contain. Who thought that gold would have been found in California till it was found? or, to take an antiquarian example for a query, who would have supposed that the curious sculptures first found on English rocks should have been so rapidly perceived to exist in Wales, Scotland, and Ireland also? The fact shows us how much we have yet to learn. Probably we may find lake dwellings in Wales and Westmoreland, and inscribed rocks in Central Europe. This would tend to confirm the old view of waves of civilization wending northwards; but we must find out more before we could say whether these were the work of the same people or of two races. The pile-dwellings present evidences of having been occupied for centuries. Some of them have been rebuilt twice upon the old foundations at different elevations, each layer of debris being distinctly visible, and containing relics. At Rokenhausen a growth of peat, from 2 ft. to 2 ft. 6 in., is to be observed over the flooring of one settlement, and below that of another, denoting the lapse of a long interval of non-occupation. There are evidences of a third floor below either of these at this station, beneath which grains of barley and wheat, threads, pieces of cloth, and fishing-nets were found, all presenting the appearance of having been carbonized. The relic bed of the floor above this yielded corn, apples, pieces of cloth, bones, pottery, and implements of stone and bone, likewise carbonized as by a second conflagration. The third settlement appears to have been broken up and deserted, as the only relics found present no appearance of having suffered by fire, and are of such a nature as a population would leave behind as useless or easily replaced. The exploier of this settlement, Mr. Messikomer, found hearthstones, a mealing stone, heaps of corn, pieces of woven and plaited cloth, raw flax, and the clay weights belonging to primitive looms, in groups at regular intervals, as though these items were the contents of separate houses in a length of platform measuring 150 ft. long by 40 ft. broad. This would give 27 ft. by 22 ft. as the size of each dwelling.

The alteration in the level of the waters in many of the lakes since these villages were built is further evidence of the distant date of their erection. Several settlements are now left high and dry that were once in deep water: others are now at the bottom of deep waters that were once shallow.

The construction of the lake dwellings has been very minutely ascertained. They are of various areas, frequently of three and four acres in extent; those of the stone age being generally exceeded in extent and stability by those of the bronze age. Two modes of forming the foundation or substructure have been ascertained; namely, by piles driven into the shallows so as to form the basis for a wooden floor of split trees or boards, which was above the level of the water, and on which the houses were built; and by fascines, when, instead of a series of piles, layers of sticks and small stems of trees were built up from the bottom of the lake, strengthened by staves or guides. At Nidau a third process was used. An immense quantity of stones was brought by boat to the site, and thrown down to form an artificial bottom. On the rough floors on all these descriptions of platforms a layer of mud loam and gravel was laid and firmly beaten or trodden down. Small piles have been found projecting above the platforms which evidently formed the framework of the houses; for, in some favourable instances planks have been found firmly wedged in on edge between these upright posts in the position of skirting-boards. This arrangement has not been seen to rise to a greater height than one plank. The walls, in every instance, have been found to have been made of hurdle work, strengthened by uprights, and covered with a thick coating of loam or clay. From the quantity of straw and reeds found in every lake dwelling, we may conclude that they were thatched. As we have seen, the interior of each hut had its hearthstone. From the number of clay weights found, and fragments of woven cloth, it is probable that most of them had also a loom. Some huts seem to have been set apart as the seat of particular processes. At Wanwil, for instance, three ordinary hearthstones were found arranged in the form of a half-moon, around which was a surprising quantity of flint refuse, arrow-heads partly worked and broken, and flint knives, an arrangement which could leave no other impression but that it was a workshop. And at Wangan, a certain spot yielding burnt and charred flax, in all stages of manufacture, and in stems with the seed-vessels attached, as well as in bundles and

skeins, spun into thread, and made into plats, could have been nothing less than a centre, or store place, for the kind of industry. This grouping of objects has led to the supposition that the lake settlements were magazines or places of meeting; but Dr. Keller points out the sizes of the huts, the hearths, the large earthenware vessels for keeping food, the pipkins covered inside and out with soot, the quantities of corn-crushing and mealing stones, all betokening domestic arrangements and family residence. The remains of articles used as food show occupation through all the seasons. Professor Heer can see summer, autumn, and winter represented in the cherrystones, the seeds of raspberries, blackberries, sloes, and dog-rose, and in the nuts of the beech and hazelnuts. Small beans, peas, barley, and two-rowed wheat, all of apparently extinct races, tell of cultivation of the soil, while fragments of fishing-nets, fishhooks, and quantities of fish-bones tell of another source of food besides that furnished by the beasts of the forests, and those domesticated by the settlers. The dwellings do not appear to have been infested with the modern nuisance of rats and mice, as no bone of either or of a cat has yet been found. Some of the bones of the larger animals present marks of having been gnawed by rats and mice, but these may have been water-rats and field-mice. One bone of a field-mouse furnishes this solution. This immunity is all the more wonderful from the fact of cattle as well as stores having been kept in the settlements.

Those who are acquainted with the incised ringed and grooved sculptures on rocks recently found in various parts of this kingdom will examine the relics from the Swiss dwellings to see if any clue is furnished by them which may lead to an interpretation of their meaning, or an identification of the period to which they belong. The nearest approach to any form of a similar kind is upon a large stone found at Font, where may be seen three hollows, which call to mind the central hollows within the parallel circles of our own stones. These three hollows are, however, unencircled, and disposed in a different manner. They are placed in a group, so as to form a triangular or trefoiled outline. Side by side with the illustration of this stone, taken from the lake dwelling at Font, there are delineations of two others found on the mainland, which have more likeness to those of England, Scotland, and Wales. One of these is on a huge block, on an exposed eminence in the neighbourhood of Bienne. The sketch and the description do not agree exactly, but, taking the former to be correct, there are ten single cups or hollows at irregular intervals, three couples with a groove connecting each pair together, and two sets of three hollows, each having a groove passing from the first to the second and from the second to the third, in neither case in a straight line, but slightly sloping, so that each group of three presents an angle of different degrees of obtuseness. The third stone, which is now in the fine collection of Colonel Schwab, was found in a grave on the height of Jolimont, between the lakes of Bienne and Neuchâtel. It has four hollows upon one of its slab-like surfaces. It will be remembered that these hollows surrounded by circles have been also found on cist-covers in this kingdom, but not in such profusion as to lead to the exclusive association of them with sepulchral formalities. A further search in the neighbourhood of those already found in Switzerland may lead to more intelligible results.

M. Troyon, in his "Lake Habitations," brings forward the view, that the successive introduction of bronze and iron was the result of the immigration of new peoples, totally different from the inhabitants belonging to the stone age. He states that the lake dwellings were destroyed and the occupiers slaughtered or driven away by these new-comers successively. The first people belonged to a Finnish or Iberian race, which came out of Asia, and following the course of the Rhone or the Rhine, found their way into the valleys of the Alps. The second people he identifies as Celts, naming Asia likewise as their starting point. The third comers were Helvetic, from south-western Germany. To all this Dr. Keller dissents. To him it seems much more certain that the lake-dwellers were one people, who gradually became possessed of the great instruments of civilization—metals; and eventually, as order was developed, gave up their isolated mode of living for more comfortable quarters, just as at the close of the Middle Ages the nobles of that day abandoned their castles and strongholds for pleasanter and more convenient abodes. This intelligent, energetic people, he believes, were Celts. The Fins, or Iberians, he altogether disclaims, and the Helvetii he will not own as conquerors of the lake dwellings.

We could scarcely give an instance more indicative of the zeal with which examinations of the relics are carried on in many quarters, than by referring to the able chapter on the manufacture of vegetable fibre. When the first specimens of burnt cloth were shown to Dr. Keller, he could not, he narrates, repress the conjecture, that they were the products of a different age, that had fallen into the water by accident, as it

* Extracted from review, in *Builder*, of Keller's "Lake Dwellings of Switzerland."

appeared to him impossible that cloth could be woven at all, much less in the complicated patterns first found, without metals; but a careful search proved that there was no doubt but that these relics belonged to the same age as the implements of stone and bone. The inquiry was taken up by Mr. Paur, a ribbon manufacturer of Zurich, well acquainted with machinery, who constructed out of the rude materials accessible to the settlers a loom in which he could produce all the cloths woven by them; and in this chapter he relates the treatment of the various sets of threads necessary for the attainment of the different patterns, and illustrates it with drawings of the looms at which the workman or woman must have pursued his or her task.

CEMENT FOR SEA WORKS.*

It has been more than once pointed out in this journal that foreign engineers are better acquainted with the nature and use of cements than we are in England, and that they have manifested greater boldness in the execution of their works with this material than has been the case in this country. While we are engaged in preliminary experiments, enquiries, and discussions, they are adopting suggestions and ideas which we, from our national predilections to old formulas and old applications, are timid in accepting. And so it happens that many of their works are not only executed at a cheaper rate, but with greater powers of endurance than similar works in England. This may be especially observed in the case of works where large quantities of concrete, *béton*, and cements are used, which materials have been applied in France for some years to purposes for which we have only recently commenced in earnest to use them. In submarine works much may be usefully learnt of French and Italian engineers, and their recent modifications of old practice has taught us our backwardness in many things in which we were held to be proficient.

The expensiveness of building cofferdams, to say nothing of their cumbersome nature, led to the use of concrete for sea works. A paper read before the Institution of Civil Engineers in 1862, imparted information not familiar to English engineers. It was then pointed out that Portland cement seemed to set better in salt water than in fresh water, although it was added that it was not applicable where there were sea currents, a statement which, as we shall show, has been to a considerable extent disproved. The whole question of the strength and applicability of cements came before the Institution last December, in a discussion on Mr. Grant's paper on "Experiments on the strength of cement, chiefly in reference to the Portland cement used in the Southern Main Drainage Works," and in consequence of the great importance of the subject, the discussion extended over four evenings. A lengthy abstract of the discussion has just been published, and we have no hesitation in affirming it to be the most valuable and useful collection of engineering facts and opinions published for a long time.

Leaving the question of the strength and resisting power of cement for another opportunity, we would draw attention to the latest experience of engineers in the use of cements for sea works. We find that Mr. G. W. Hemans is now using the wooden box which has found such great favour in France in lieu of cofferdams, in Carlingford Bay, in deep water, where it was impossible, owing to the limited means at the disposal of the engineers, to construct the ordinary cofferdams. Until the paper was read Mr. Hemans intended using for the foundation *béton* formed of Portland cement, but from facts adduced he seemed to fear whether it would be prudent to rely on that material. The box, it is necessary to add, would be used only up to low-water mark, and there certainly does not seem to be any difficulty in this case. Portland cement has been largely used in the pier works at Dover, and the result of most careful testing has corroborated the wisdom of the practice of foreign engineers. No detriment, we are assured by Mr. Druce, has been occasioned by the use of it in salt water, and he reports that he has found that cement in liquid concrete, after it had once set, was not affected by the currents. We find that English Portland cement has been successfully employed for concrete *en masse*, in constructing the under water foundation for a lighthouse in a coral reef in the Red Sea. Mr. Bazalgette gives it as the result of his own experience that Portland cement does set well under water. Mr. Kinnipple, on the other hand, lays it down as the result of some experiments of his own, that for tidal work Roman cement stands the "wash" best, *lias* lime next, and Portland cement last. He adds that a joint was seldom lost when in Roman cement *compo* brick, in *lias* lime mortar now and then, but in Portland cement *compo* there

was very great difficulty in preventing sometimes six or more courses being destroyed in one tide, from the loss of the joints. He recommends that Portland cement brickwork, covered by water in twenty-four hours, should be made with *compo* as stiff as was possible to use it. The bricks should be quite dry, cleansed from the maker's sand, the face joints raked out for a depth of 1 inch whilst green, and pointed temporarily with Rochester yellow clay. The clay would last many days, and by the time the clay joints were washed away the cement work would be perfectly set, and could then be pointed in cement. It is believed that the best method of treating all brickwork under water would be this:—The joints of *compo* should be dispensed with, the bricks should be coated with *compo*, and he allowed to set out of water several hours, and be then rubbed together in position under water. More of this anon.

An instance showing how the difficulty of placing concrete in running water was successfully overcome in a most simple manner, was told by Sir C. Fox. He says that in forming the foundations of the Rochester bridge the cylinders were sunk 42 ft. below the bed of the river; being a tidal river there was some water—"breathing," as the workmen call it. Consequently it was discovered that all the cement in the concrete, when placed at the bottom of the cylinder, was washed out and came to the surface, so that for 9 in. or 10 in. at the bottom only ballast remained. According to Sir Charles, the method of overcoming this difficulty was thus:—A quantity of concrete having been prepared, a piece of stout canvas sail cloth, such as is used for hose pipes, was cut 1 ft. larger in diameter than the bottom of the cylinder. This sail cloth, as soon as the water had subsided, was spread over the surface at the bottom of the cylinder, to which it was well fitted all round, and when covered with about 2 ft. of concrete it held down the water until the remaining concrete was deposited safely upon it. This plan was adopted with all the cylinders, and in each case Portland cement was used.

The quay walls in Dublin port were built of concrete, formed of one part of Portland cement to ten parts of the gravel of the Liffey; it was not set in blocks, but deposited between planks. Mr. Stoney, the engineer, encouraged by his success in this instance, has undertaken the formation of concrete blocks on a larger scale than has yet been attempted in the building of a wall 24 ft. below low water, without cofferdams. Mr. Bateman states that these blocks were made 23 ft. upon the base, 26 ft. deep, and 10 ft. upon the face, and weighed 330 tons each. "They were built," he goes on to say, "on a strong platform formed on the shore to carry this enormous weight, and were allowed to remain as long as was necessary to harden before they were removed. They were then floated to their destination, and lowered to the base previously prepared for them, under a large diving bell 20 ft. square." The cost was a mere bagatelle compared with those other modes of construction which involve the use of cofferdams; in fine weather they might be laid on an average of one block at every tide, but by supposing that only one block could be laid every other day, or 150 blocks in one year, they would form a wall 1,500 ft. long. About a year ago Portland cement was used in the construction of a pier facing the German Ocean, by Mr. John Coode. It was exposed to the "fetch" of the sea of from 190 miles to 200 miles, the whole of which, from the foundation courses upwards, was specified to be of Portland cement concrete blocks, the face of the work being of the same material. The experience of Mr. James May, during fourteen years at Alderney, had shown that the blocks of concrete made with Portland cement, indurated with time, rather than disintegrated. Mr. Coode is reported to have said:—

He would observe that amongst all the experiments made with Portland cement, he was not aware of any having been made with reference to its resistance to the action of attrition or abrasion. That was a quality which Portland cement possessed in a remarkable degree, and experiments in that direction might be worth the attention of manufacturers, and would, he anticipated, exhibit some extraordinary results which would be very useful, and encourage the larger use of the materials. Sea-walls, or piers faced with concrete blocks, and exposed to heavy seas, would not only have to resist the cheek of the waves, but also the severe test of the attrition due to the moving sand and shingle, which were always found to tell considerably upon such works at the ground line in shallow water, and this was one of the greatest enemies to contend against in works so formed.

Concrete blocks in a tide-way have been supposed to prove unsuccessful, but Mr. Hawkshaw and others have not experienced any difficulty in so using it. Mr. Hawkshaw says he has successfully passed concrete by means of boxes through 70 ft. of water, and that he has seen sea-walls in Italy built in 20 ft. of water without passing the concrete to the bottom in boxes. "Nothing more was done than to mark out the outline of the wall by piles boarded on the sides. It was mixed very rapidly, and a large number of men and boys were employed to carry it away in small quantities, and throw it

where it was to be deposited." We are assured that extensive sea-walls are built in the Mediterranean in that way.

Of course, as in other things, unless proper precautions are taken, failure will be the result. There can be no question that much depends upon the mixing of the proportions of sand, for in submarine works it is necessary that the cement should be of first-class quality. It was found by Mr. Grant in his experiments made before the Southern Main Drainage Works were executed, that the proportionate strength of cement and sand increases between three months and twelve months, at the rate of 2 per cent. every three months, but in the course of the second year only 1.38 per cent. per annum; and from other experiments it appeared that cement allowed to set under water gained in strength 24 per cent. to 30 per cent. Mr. Grant also insisted that it is of the greatest importance that the bricks or stone with which Portland cement is used, should be thoroughly soaked with water. If under water, in a quiescent state, the cement will be stronger than out of water; in one case it was one-third stronger. It is most satisfactory to find from Mr. Grant's tables that Portland cement sets better in salt water than in fresh. Mr. Druce states that, in the manufacture of the cement, his practice at Dover was to expose it to the air for one month, which, he says, reduced the imperfectly burnt portions to an inert and harmless condition, and as the result, faulty cement in the work had been most rare. Mr. Rawlinson, who has had great experience in the use of hydraulic mortars and cements, gives an account of an application of good Portland cement not generally known—viz., its use under water by the diver. It has been used by him to "make a joint between iron and iron under a 90 ft. head of water, with perfect success, to keep out a quicksand. No other means had enabled him to master that quicksand." He was once engaged in sinking a well where there was a quicksand at the depth of 90 ft., overlaid by a thick bed of marl, and underlain by new red sandstone rock. The ordinary method failed in the first well; the second well was sunk within 30 ft. of the same site by 7 ft. cylinders, but the dip of the rock was at such an angle that the 7 ft. cylinder could not be made to bed into its surface. "He then worked with drills in the sandstone rock, by placing a second cylinder inside the first, with a cast-iron diaphragm bottom, having a 2 ft. hole in the centre for the passage of the boring tool; but the difficulty was to make the joint between the two cylinders tight." Iron cement washed away, so he set down pure stiffly-made Portland cement in buckets; "this was put in place by divers and set perfectly, where it had remained for three or four years, though exposed to a severe strain by the constant pumping."

For running water, it has been well proved that cement should be less heavily burned. The engineers in France are most particular in testing such cement before they use it. A manufacturer of Portland cement states that "the French tests were made at two days, at five days, and at thirty days, on cement of 103 lbs. or 104 lbs. specific gravity," and the cements supplied to meet these demands have been from 50 per cent. to 100 per cent. in excess of the requirement. There can be no question that different works require different qualities of cement, and the valuable experiments recently made show how much we have yet to learn, and how much we have been in ignorance of the whole subject.

SOME EFFECTS OF THE LATE GALE IN LIMERICK.

In the early part of last week Limerick was visited by a severer gale than has been experienced there since 1839. We are informed that the stoutest buildings shook under its powerful influence, and some old houses in Irish town were observed to rock when the tempest was at its height. A number of chimney tops have been blown down, and many houses stripped of slating. The tide rose four feet beyond its usual level at springs, inundating the quays at both sides of the river, and filling the underground kitchens in many localities. On the Lower Shannon considerable damage has been done on low lands, where corn stacks were washed away, and immense quantities of hay destroyed. On the Upper Shannon severe losses have also been sustained by farmers. In many places large trees have been blown down. Half way between Kilrush and Tarbert, a distance of nine miles, the steamer was struck by a sea which put her on her beam ends, laying prostrate every one on board, and smashing to atoms all that was in the cabin in the way of glass and ware, and emptying the steward's closet of the whole of its contents. The works at Corknaree embankment, below the docks, have been swept away to a great extent, to a depth of seven feet.

* From the Building News.

THE CONTRACT SYSTEM.

THERE are still some who indulge in the vague speculation and delusive hope that the world will again produce men equal in genius and ability to those whose names have been handed down to us as the immortalizers of art in the early times. They believe that we may again have painters like Raphael, sculptors like Michael Angelo, architects like Inigo Jones, and musicians like Handel and Mozart. Fain would we give adherence to the same belief, but in all sincerity we are convinced that such anticipations are in all probability doomed to inevitable disappointment. It is not that the absolute genius or mind is wanting; the seeds are there, but the present age is not the soil to bring them to perfection. There was a time when artists, in the high sense of the term, were the guests of kings and emperors, and royalty did not consider itself demeaned by picking up the brush which had fallen from a painter's hand. In those days a man was free to carry out the realization of his own ideas unfettered and untrammelled by the contingencies of time and money. He had but one object in view, and that was that his work should be the highest possible embodiment of his art. Should he not live to finish it, some of his contemporaries equally famous with himself would complete the execution of his design. He never based his plans upon a percentage of the cost, for no estimate was ever made; alterations and embellishments were added as he thought advisable and conducive to the beauty of the work without being considered "unnecessary," and placed in the category of an "extra." He had but one sole motive to spur him to exertion—the highest a man could have—the love of his art. Is it so now? We do not for a moment attribute sordid motives to our votaries of art; it would be an injustice so to do; but it must be admitted that other and inferior motives are of necessity now associated with those of a higher character.

Let us compare the old with the present system. A design is required for a new National Gallery and new law courts—any structure, in fact, which might be made an honour to the nation and immortalize the architect. From among the competitors there are undoubtedly a few who possess, at any rate, some of the genius, some of the fire, some of the enthusiasm which inspired their brethren in former days. There are a few who could design an edifice worthy of the palmy days of architecture; whose work might almost persuade us that its ancient glory was restored to us. Imagine the design conceived in the architect's mind. He proceeds to put it on paper; he already sees the harmonious outline, the noble proportions, the delicate contours in semi-reality before him, and he stops short. He dares not go on; a fearful thought presents itself to him, and like a "brush of that dark angel's wing," sweeps his splendid fabric—the creation of a true artist—into irrecoverable oblivion. The sudden thought is the cost—the estimate. It would be ridiculous to send in such a design for competition. A government which is sufficiently ingenious to spend seventy millions upon nothing, and to pave a great dockyard in a manner which enables it in point of value to rival the fabled sands of the yellow Tiber, would never accept, or even dream of accepting a design, were it the personification of art itself, exceeding an inferior one by ten or twenty thousand pounds. What does our architect do? What must he do? He succumbs to necessity. Another and a baser divinity occupies the shrine of his worship. He bows down before it, and Mammon reigns triumphant. The erasing knife and the rubber soon efface the superfluous (?) beauties of the design; and, shorn of its grandeur and majesty, it goes in along with the rest of the herd, debased to their level, and bearing with it, in every figure of the estimate, the brand of its disgrace and degradation.

It used to be, "Plan a building surpassing everything of the kind yet attempted;" it is now, "Prepare plans for so-and-so not exceeding a certain estimate." It would be idle to comment upon the difference of scope, the extent of field, permitted in the two instances. In the first, there are no conditions attached to the order; in the second, everything is reduced to £ s. d. It may be said that money is sometimes not the chief consideration, and the Houses of Parliament are an instance of it. Well, look at them—look while we may; for at the rate they are going we shall not be able to look at them much longer. They are a splendid standing example of a dissolving view. Look again at the interior; the room in which the representatives of the people are supposed to meet is not so large as the ball-rooms of the houses of many private gentlemen. If by any chance a large majority of the members were to attend there would not be standing room for them. Could anything be meaner or more niggardly than to design a hall unable to contain all those who ought to be there? The idea is absolutely absurd; it amounts to virtually telling two-thirds of the members that there is no place

for them. As with the designing, so with the execution. Those engaged in building the splendid early specimens of cathedrals and palaces had no profit to derive from the carrying out of the work. What is the present system? Bearing in mind that we are speaking strictly of the system, there is no use in shirking it; it is simply this—if a contractor chooses, and is permitted, to substitute had workmanship and materials for good, it is so much money in his pocket. It would be unjust to assume that any honourable men—and among them we may include the majority of our contractors—would be guilty of such a substitution, but on the other hand there is abundant evidence that work is frequently undertaken with no other object in view. Looking at the matter in a broad light, it is undoubtedly the duty of any contractor, as a man of business, to make the most out of a job. He has no right to think, and he seldom does, about the beauty or appearance, in an æsthetical sense, of the work he has in hand. There is not an engineer or clerk of works who has had charge of important contracts who could not have suggested improvements during their progress, but the contractor is not going to make them for the "look of the thing" on his own responsibility, and those who would have to pay for them "don't see it." The consequence is that the building is finished in its pristine ugliness and deformity when it might, for the sake of a little extra expense, have been rendered at least a respectable structure. If there should not be sufficient funds to complete an edifice it would be infinitely better to leave it unfinished; it would be better to have a cathedral or church without a spire or tower than for it to possess them at the expense of the rest of the building. An addition can always be made at any time; none of our churches can compare with the unfinished ones in various parts of the Continent. Granting that the higher motives do prevail among our present artists, yet of necessity it is mingled with others of an inferior nature, and it is a manifest impossibility that art can ever again attain to the standard it occupied when its votaries were actuated only by the nobler motive. The prevailing tendency to accept the lowest tender, with its indirect influence upon the nature of the designs, is doing more to undermine their intrinsic merit and artistic value than any other circumstance. It is well known that first-rate firms altogether abstain from tendering for certain contracts, being well aware that they could not do good work at the price at which their tender would be accepted. The old adage, "penny wise and pound foolish," was never more exemplified than in the present day.

Not only do our remarks apply to the arts of engineering and architecture, but the same system pervades the whole of the fine arts. Operas are composed at so much a-piece, books are written per volume, pictures are painted, and walls are covered at so much per square foot or yard. It is emphatically the age of piece-work—indubitably the true touch-stone of labour; but far from being the true criterion of merit.

It will probably be demanded—what are we to do? Are we to return to the old system? By no means; that would be impossible, and on the whole undesirable. "*Tempora mutantur et nos mutamur in illos.*" We cannot return to the ancient regime; we must stick to our present principle of management, but we can do a great deal to ennoble art and induce a true appreciation of it amongst us. We need not paralyse the energies of our artists, throw cold water upon their aspirations, and check all their efforts by putting a mercenary limit to their results. The nation will soon have an opportunity of showing the world that it has architects who can design an noble pile, provided it can insure the absence of two hitherto inseparable accompaniments of all national competitions—viz., jobbery and incompetency of the judges.—*Engineer.*

BELFAST.

THE Town Improvement Committee of Belfast, in their report to the Council presented on the 1st inst., state as follows:—

"Your committee, at the request of the surveyor, have, during the past month, approved of the following plans:—Plan of proposed addition to the Smithfield Spinning Company's premises in Winetavern-street. Amended plan of four houses proposed to be built in Foreman-street, by Mr. George Long, of 89½, M'Tier-street. Plan of frontage of houses submitted by Mr. William R. Jackson, of 16, Donegall-place, proposed to be erected on the Old Malone-road. Plan of factory at Clowney, Falls-road, for Messrs. Gamble and Shillington, Linen Hall. Plan of one of four dwelling-houses proposed to be built in Duffy's court, off Boundary-street, for Mr. Hugh M'Guirk, of 9, Victoria-street, subject to bond entered into by Ellison being fulfilled. Plan and section of six houses proposed to be built in Tennent-street, for Wm. Reid,

of 112, Peter's-hill. Plan and section of six dwelling-houses to be erected in Beresford-street, for Mr. R. Kennedy, Antrim-road. Plan of thirty-four dwelling-houses to be erected in intended new street off York-road, for Mr. Longford Hanna, of 21, Garden-street. Plan of three dwelling-houses proposed to be built in Milford-street and Cinnamon-street, for Mr. John Mulholland, of 57, Milford-street. Specification for making five out of ten intended new streets off Leeson-street, for Mr. Thomas Lowry, of 30, Canning-street. Ground plan and section of a dwelling-house and shop at Shankhill-road, for Mr. William Spence, 63, Denmark-street. Plan of nineteen houses in Matlock-street, for Messrs. J. and C. Gardner, York-lane. Plan and section of proposed new streets at Brookfield, the property of Messrs. Johnston and Carlisle."

(A number of plans for new streets and houses were rejected by the Committee, on account of no provision being made for sewerage, paving, &c.)

"Your committee have had advertisements extensively published for tenders for the paving of sixteen of the streets ordered by the Council under the new Act. Some of these tenders were so much higher than the estimate of the surveyor that your committee could not entertain them. One tender they were willing to accept if proper security could have been given by the contractor, but, after a lengthened interview with him, your committee found that he could not come to any arrangement for securing the performance of his contract, and they, therefore, were obliged to refuse to accept his tender. Another tender from a contractor of unquestionable solvency would at once have been recommended by your committee, but some of the items required modification, and a sub-committee was appointed to confer thereon. In case they come to an arrangement, your committee recommend these contracts to be accepted, as it is of great importance that these works should be commenced at once, and they cannot be at present executed by the workmen of the Council."

Messrs. Monck and Co. have entered into a contract for the paving and sewerage of a number of streets. The streets are to be hand-pitched, as the Improvement Committee found there would be only a difference of 2d. per square yard in hand-pitching the streets, and constructing them of broken stones. The amount of the contract is £10,000.

The following resolutions respecting the laying out of the new cemetery have been adopted:—That plans and estimates for laying out the new burial-ground be forthwith advertised for, upon the following conditions:—That a clear sixth be set apart as a separate public Roman Catholic burial-ground. That two clear sixths be set apart as a public ground for all other religious denominations. That the residue of the ground be laid out for sale in lots. That the plan and estimate include the allocation of sites for a porter's lodge and two mortuary chapels, the building of an enclosure wall, drainage, the formation of roads, and the necessary ornamental planting and completion. That the entire cost is not to exceed £10,000, exclusive of building. That the successful competitor shall be paid 4 per cent. upon the outlay, if a contractor can be found to execute the work for his estimate, to include the payment of a clerk of the works.

IRISH BUILDING NEWS.

GENERAL.

Extensive repairs are to be made in the Wicklow County Gaol.

Additions are about to be made to the school building of the Belfast Union Workhouse.

The Hon. the Irish Society, on whose property the town of Coleraine, Co. Derry, stands, are about to build a tower to the parish church; they also intend to rebuild the society's school-houses in Beresford-place, Coleraine. The design, it is intended, shall be ornamental, and to include play-ground as well as ample school-rooms.

The Sixmilebridge Drainage Board have declared Messrs. Brennan and Costello of Drogheda, contractors for the completion of the works on the Ballymacashel River, and which were suspended in consequence of the inability of former contractor to carry them out. The works at Glenomera River have also been entrusted to the same gentlemen, for the sum of £4,300. Although tenders of a lower amount were sent in, the Board resolved on giving a preference to Messrs. Brennan and Costello, who, we believe, have given satisfaction in the execution of all works hitherto confided to them.

Mr. J. M'Curdy has furnished plans for the enlargement and repewing of St. Paul's Church, Bray, Co. Dublin. The additions comprise a chancel, robing-room, and porch, and an extra door. The estimated outlay is about £800. The Ecclesiastical Commissioners supply £250, the remainder will be made up of local subscriptions.

The old approach to the City Hall, Cork-hill, is nearly demolished. In our number for May 15th we gave an outline sketch of Mr. Thomas Turner's design for the new approach. Mr. Meade, of Great Brunswick-street, is the contractor.

ESTABLISHED CHURCH.

Ballysillan Church was reopened on the 2nd inst., after undergoing additions and improvements of an extensive character. Previous to the enlargement just completed the church could accommodate 180 persons only; there are now sittings for over 400. Ballysillan has within a few years shared in the prosperity of our northern towns; industry and enterprise, as shown in the number of its mills, have changed it into a populous place. The old building was plain, and has been converted into a transept of new structure, and, with the addition of a chancel and nave, it has been made to assume the form of a Latin cross. The utmost uniformity has been attained notwithstanding the diverse character of the component parts. The disposition of columns and arches, and the re-arrangement of the transepts have been contrived so as to result in a graceful and harmonious whole. There is an absence of labored ornament and pretension, both externally and internally, but nevertheless the chaste yet imposing air of elegance which is everywhere observable would not be uncongential to an æsthetic taste. The chancel embellishments are in keeping with all the surroundings. It contains a stained-glass window—the magnificent gift of Lavens Ewart, Esq., Glenmackin. The subjects portrayed are memorials from the life and sufferings of our Lord. The centre-piece represents Christ as king, and the other subjects comprise the Annunciation, the Adoration, the invitation to little children, and other incidents in his career. Surmounting all is a scroll, on the design of which Mr. W. H. Lynn has expended much taste, and produced a most suitable ornament. The scroll contains the exultant declaration commencing "Worthy is the Lamb." The pulpit is a neat piece of workmanship. The seats are commodiously arranged, and, like the sound boarding or "sarking" of the roof, are stained in oak. Great attention has been paid to details: the corona or circle depending from the roof add to the *tout ensemble* by their beautiful workmanship and colouring. The drapery was presented by the ladies of the congregation. On the whole, it would be difficult to find a neater little church within a wide area. The architects were Messrs. Lanyon, Lynn, and Lanyon, and the builder Mr. McMaster. It is intended to put handsome railing round the church, and make a neat entrance to the new porch. The cost of the enlargement will be under £2,000, one-half of which is contributed by the Ecclesiastical Commissioners.

A stained glass window is to be placed in the parish church, Carlingford, Co. Louth, in memory of the late Hugh Moore, Esq., of Nootka Lodge.

ROMAN CATHOLIC CHURCH.

The new Roman Catholic Church of Saul, County Down, is to be consecrated on the 16th inst.

The new Roman Catholic Church of St. Paul, Emo, Portarlington, Queen's County, will be dedicated on the 16th inst.; and that at Roundtown, County Dublin, on the 23rd inst.

DISSENTING.

Riverside Presbyterian Church, recently opened, is in the style termed "Lombardo-Venetian," a style particularly suitable for the site on which it is erected, bounded on two sides by the river, and on a third by the canal. Externally the building is of red brick, with cut-stone window tracery, bands, and cornices. The east and west gables have circular windows. The four side windows are in couplets of circular-headed lights filled with Hartley's quarry glass, and separated by piers of moulded brickwork. The tower is square, in height about ninety feet, with pyramidal roof of diamond-shaped slates. The dimensions of the church are fifty-one feet long by thirty-five in width. The entrance is by a vestibule of thirty-two feet by nine feet, with central door, having coupled openings divided by stone piers. Two inside doors lead to two aisles, which divide the seating into three sections. Over vestibule, and extending about ten feet into the church is a gallery, which for the present will be used as a Sabbath school. In this gallery it is proposed hereafter to provide accommodation for about 120 persons. The internal finishing of the building is simple and chaste. The roof is partially open, plastered on a line with the hammer beam, below which the trusses are exposed, stained and varnished. The seating is open, with shaped bench ends. The pulpit is composed of a central and two lateral divisions, and is supported on grouped pillars, with carved capitals. Under the window behind the pulpit is a panelled recess with pillars, mouldings, and cornices. The architect was Mr. W. J. Barre, of Belfast; Messrs. McLaughlin and Harvey, builders.

Since the Wesleyan Conference of 1865 the following erections have been sanctioned by the committee:—114 chapels, at a cost of £186,049; 9 ministers' houses, £6,482; 26 schools, £17,922; 57 alterations, &c., £17,547; 21 organs, £3,621; 50 modifications, £16,767; total cost, £190,388. Compared with last year this showed an increase of 19 chapels and £17,959 in proposed outlay, and an increase of four school-rooms.

The new Wesleyan Chapel at Enniskillen is fast approaching completion, and is expected to be ready for opening next month. Mr. William Campbell is the contractor.

MISCELLANEOUS.

The Dublin Metropolitan Hall Company (limited) have announced their determination to dispose of their building in Lower Abbey-street. It is capable of holding 3,000 persons, and is well suited for the purposes of concerts, for which it was originally intended and used by the former proprietor, Mr. Clason.

The workmen employed at the razing of Ferryquay Gate, Derry, have come on very curious coins and other articles. A pair of handcuffs, a brass whistle, an iron halbert head, with screw, and a snuff-box, in the form of a horse's head, have also been found. The latter article is impressed with the figures 1688, and is a curious piece of workmanship.

An engine of thirty horse power, manufactured by the Newry Foundry Co. (limited), has been supplied to Mr. A. R. Walker for his extensive corn and flour mills, Mill-street, Newry. The engine is capable of working twelve pairs of stones, and is considered a creditable specimen of the manufacture of the company above named.

Last Saturday, after three weeks of being grappled with and slipping away, the Great Eastern not only seized, held, and raised the old Atlantic Cable, but brought the bight on board, and retained it. On Sunday, "Canning," from on board, "had much pleasure in speaking to Glass," in Ireland, through the 1865 cable. The Albany first grappled and raised the cable on the 10th of August; but the sea took its own again, and then the Great Eastern, the Albany, and the Medway, alternately caught and lost it, till finally the first-named vessel secured the prize. Never was there three weeks of such sport, nor a 1st of September of such triumph for the sportsmen.

THE HEALTH OF DUBLIN.—In the Dublin Registration District the births registered during the week ending September 8th, amounted to 146—73 boys and 73 girls. The number in the corresponding week of last year was 152. The deaths registered during the week were 184—94 males and 90 females. In the corresponding week of last year the number was 142. Fifty-two deaths from cholera were registered, showing an increase of 11 on the number registered during the week preceding; the number of deaths from cholera registered in each of the five preceding weeks were 2, 5, 13, 15, and 41. Thirteen deaths resulted from diarrhoea, against 5 in the preceding week. Nine deaths were referred to fever. A servant-maid, aged 28, died in Cork-street Hospital of small-pox; there is no reference to vaccination in the return. Twelve deaths were caused by convulsions. Ten deaths were ascribed to bronchitis, and one to pneumonia or inflammation of the lungs. Phthisis or pulmonary consumption caused 17 deaths. Three deaths were caused by apoplexy, and 2 by paralysis. Three deaths were attributed to heart disease, and one to aneurism. To cancer 3 deaths were referred; a like number was registered in the corresponding periods of 1864, 1865. Four accidental deaths were registered during the week, viz.:—A girl, aged seven years, died from injuries of the head, caused by falling down stairs; a porter, aged 23 years, died from fracture of the spine; a man, aged 37 years, died from the effects of several injuries received by having been run over by the Dublin and Wicklow Railway Train, he being in a state of temporary insanity; and a sailor, aged 35 years, who was drowned in the River Liffey. Sixty-three of the deaths registered during the week occurred in hospitals and other public institutions; of this number 6 took place in the North Dublin and 13 in the South Dublin Union Workhouse. The number of deaths registered in the entire of the Dublin Registration District during the week, represents an annual ratio of 30 in every 1,000 of the population by the Census in 1861. In London the ratio was 23 in every 1,000 of the estimated number of inhabitants; in Glasgow 23; and in Edinburgh 23.

News has been received from the United States scientific exploring party, which was sent out last year, by the Western Union Telegraph Company, to make explorations in Russian America, with a view to the construction of a line which shall connect the

American system of telegraphs, crossing Behring's Strait, with the Russian system on the Asiatic continent. The party comprises a palæontologist, botanist, naturalist, and general collectors, who combine their scientific researches with the service they render to the telegraph company. Their last year's work consisted, for the most part, in mapping out the operations for the present season, and in placing men and outfits where they would be likely to be most useful. They had, however, made numerous marine collections from the surface, and by soundings in the North Pacific and in the Strait, and among the islands on the American and Asiatic shores. At Ouniga island they examined the lignite, or brown coal beds, and brought away such a series of fossils as will, it is thought, determine their age. By the end of the present season the several members of the party, from Sitka, St. Michael's, and the lower Youkon district, Norton Sound, will be re-assembled, bringing the results of their year of exploration, which cannot fail to be interesting and very instructive. It is understood that, with certain restrictions, the collections obtained will be placed in the hands of Prof. Baird, of the Smithsonian Institution. A better disposition of them could not be made, for the institution will not fail to publish all that is valuable from among them, and distribute freely to the scientific men of all countries.

NEW IRON-PRESERVING AGENT.—Dr. Henry Ed. Francis de Brion, a Paris physician, who for many years has resided in England, has discovered and patented a process for preparing from india-rubber an enamel paint, which is absolutely proof against the action of the atmosphere, as well as against the power of all liquids (including the most potent acids), to affect iron. The preparation is applied cold and in a liquid state, and in consistency and general appearance it resembles such common oil-paint as is ordinarily used for iron-work. It may be applied with ease; but of course it is necessary that the process of application should be conducted with such care as will insure a complete covering of the surfaces to be protected. This covering may be so thin that its presence cannot be detected; while it leaves the protected surfaces in all their original sharply-defined freshness. It hardens also at once, and immediately forms a smooth and lustrous enamel like covering, air-proof, damp-proof, water-proof, and acid-proof. Thus protected the iron is safe. Rust cannot accumulate on the surface of this enamel-paint, nor corrode beneath it. — *Art Journal.*

The new Prince of Wales's Theatre, Liverpool, will be opened on the 15th October. It stands opposite St. George's Hall, facing one of the widest and most crowded thoroughfares in the town. It is the property of a Limited Liability Company. The architect is Mr. Salmons, of Manchester, who is said to have improved upon the best points of the principal theatres and opera houses, both in this country and on the Continent.

At a recent meeting of the French Society of Civil Engineers the result of some experiments with Messrs. Frey, Brothers, and Sayn's excavating machinery was given. The cylinder of the engine forming the motive power was 7.4 inches in diameter, with a stroke of 14.2 inches, and it was supplied with steam at a pressure of 120 lb. per square inch, cut off at two-thirds of the stroke. The speed of working was 140 revolutions per minute, and this gave a speed to the bucket chain of 1.47 feet per second, the number of buckets passing in one minute being 30. The capacity of each bucket was 1.41 cubic foot; and if each bucket had been completely filled, the quantity excavated at the above rate of working should, consequently, have been 42.3 cubic feet per minute, or 94 cubic yards per hour. During the trial of 91 minutes, however, the quantity excavated was 76.4 cubic yards—this being at the rate of 50.38 cubic yards per hour, or 503.8 cubic yards per day of 10 working hours. The amount actually excavated was thus about 54 per cent. of that theoretically due to the speed and capacity of the buckets. The earth was lifted 4 yards, and moved 12 yards horizontally, yet the cost was only about 1d. for each cubic yard excavated.

TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

All Communications respecting the DUBLIN BUILDER, should be addressed to MR. PETER ROE, 42, Mabbot-street, to whom all payments for Subscriptions and Advertisements must be made.

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MESSRS. EARLEY and POWELLS beg to announce that Messrs. John Hardman and Co., of No. 1, Upper Camden-street, have resigned the business of Artists, Sculptors, Church Painters, and Metal Workers, in their favour.

Earley and Powells have added to the above mentioned business the Painting and Staining of Windows for ecclesiastical and domestic buildings, under the management of Mr. Henry Powell, who conducted the Stained Glass Department of J. H. and Co., Birmingham for many years.

Mr. Thomas Earley is the only Church Decorator living who was taught his profession by the late A. Welby Pugin. E. and P. being thoroughly practical men in each Department, are enabled to supply real artistic work at a moderate cost. They, therefore, respectfully solicit the patronage of the Clergy and Gentry of Ireland.

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TESTIMONIALS.

From WILLIAM TITE, Esq., M.P. for Bath, and Architect of the Royal Exchange, London.

House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have used both the sorts of Cement manufactured by your firm, and that of Messrs Francis & Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good. I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant,

Messrs. White & Son. (Signed) WILLIAM TITE.

From R. O. MINNIE, Esq., Surveyor to Board of Ordnance, London.

War Office, Pall Mall, London, S.W.,

2d March, 1864.

GENTLEMEN,—In reply to your request, I have much pleasure in stating my favourable opinion of the quality of your Portland and other Cements, which have been extensively used in the Public Works connected with the War Department at home and abroad, especially in several of the fortifications now being erected in this country. On all occasions within my knowledge the quality has been equal to that of any other manufacturer, and has given great satisfaction.—I am, gentlemen, your obedient servant,

(Signed) R. O. MINNIE, Surveyor.

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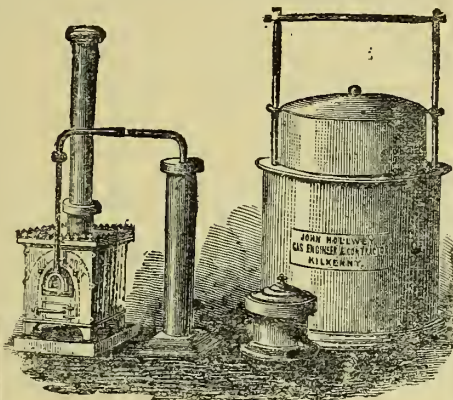
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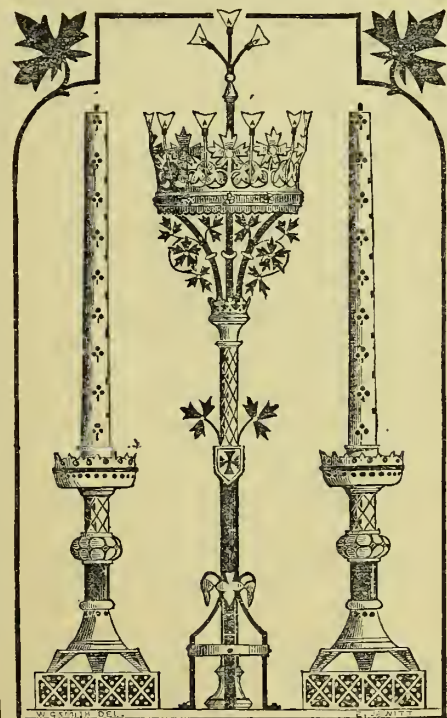
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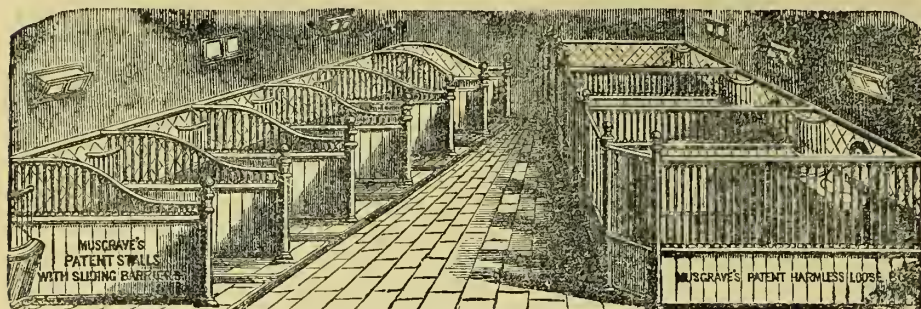
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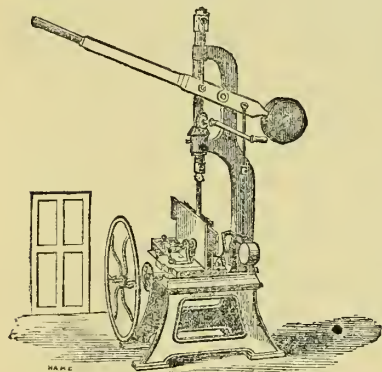
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OCTOBER 1, 1866.

1ST & 15TH
OF EACH MONTH.

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NEW ROMAN CATHOLIC CHURCH, WOLVERHAMPTON.
DENNETT'S FIREPROOF CONSTRUCTION.

Contracts.

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Each Proposal should be for a lump sum, and must be accompanied by a separate Detailed Estimate, giving Quantities and Prices, and be endorsed "Tender for Chief Officer's House, Howth."

Both Tender and detailed Estimate should bear the Name and Address of the Proposer on the back.

Printed Forms for Tenders can be had at this Office.

N.B.—Persons Tendering should send in Testimonials as to character and competency, unless previously known to the Board.

By order of the Board,

EDWARD HORNSBY, Secretary.

Office of Public Works,

Dublin, 21st September, 1866.

• If this be not attended to, the Board cannot return detailed quantities to the unsuccessful parties.

BOARD OF PUBLIC WORKS.

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EDWARD HORNSBY, Secretary.

Office of Public Works,

Dublin, 13th September, 1866.

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NOTICE TO BUILDERS

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ECCLESIASTICAL COMMISSIONERS
FOR IRELAND, on or before the 20th day of October, 1866,
will receive Proposals for

ENLARGING THE CHURCH OF
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According to the Plans and Specifications, to be seen in the hands of the resident Ministers of the Parishes.

The lowest Proposal will not necessarily be accepted.
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A Prospectus, setting forth in detail the Fees and Hours of Instruction, will be shortly issued.

The Works executed in competition for the prizes offered by the Society, must be sent in on or before the 15th December, 1866.

The Exhibitions of the Works executed for the Taylor Prizes and Scholarships will be held in the month of November, 1866. Works intended for this Exhibition to be sent in on or before Saturday, 10th November, 1866.

Competitors for the Taylor Art Prizes are to apply, according to a form to be had on application at the Society's House.

WM. EDWARD STEELE, M.D.,
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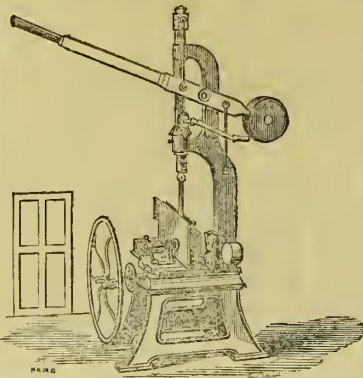
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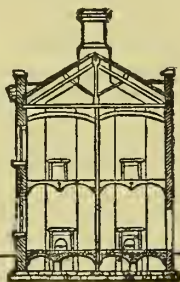
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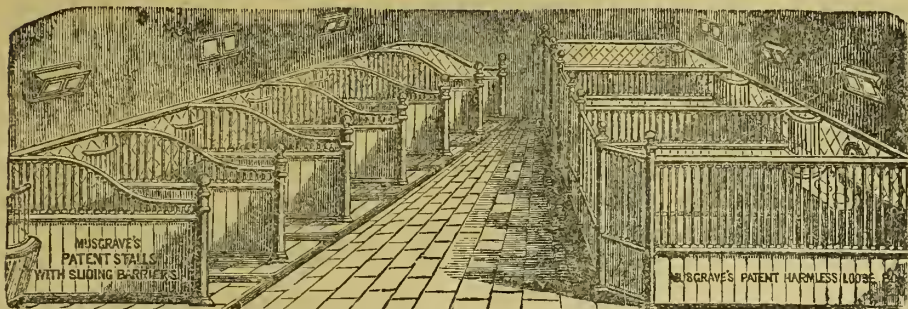
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From WILLIAM TITE, Esq., M.P. for Bath, and Architect of the Royal Exchange, London.

House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have used both the sort of Cement manufactured by your firm, and that of Messrs. Francis & Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good. I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant,
Messrs. White & Son. (Signed) WILLIAM TITE.

From R. O. MINNIE, Esq., Surveyor to Board of Ordnance, London.

War Office, Pall Mall, London, S.W.,
3rd March, 1864.

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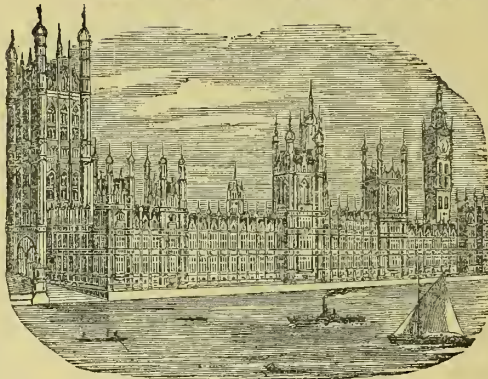
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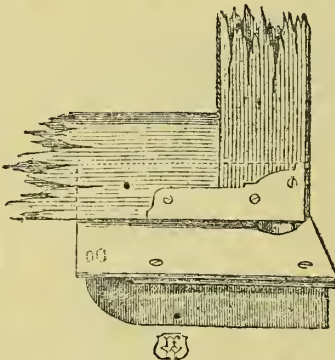
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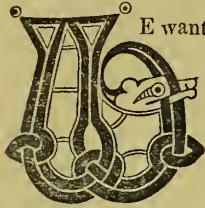
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The Dublin Builder.

VOL. VIII.—No. 163.

DOCTOR NEILSON HANCOCK ON SANITARY LAW IN IRELAND.



A We want Reform—Parliamentary Reform—not in the sense in which the word is blunderingly used by the political factions of the day. We care little or nothing, as far as our present subject is concerned, with what classes of the community rests the predominant share of power of nominating members to serve their country—or themselves—in the House of Commons. That is a subject which has an interest of its own, but this is neither the time nor place for discussing it. The Reform we want is one that must be made in the Parliament itself. By no body entrusted with the discharge of important duties, are those duties more constantly performed in a manner that in the case of any other constituted authority would so loudly call for general censure of the gravest character. We feel ashamed of the occasional revelations in the public prints of what takes place in the reign of “Bumbledom;” and we only do not groan over the performances of our aldermen and town councillors, because we know whence they come, and “what can you expect from a pig but a grunt?” But here we have a house that takes on itself to regulate the affairs of all the known world, and yet cannot pass a Bill of any dimensions without laying the foundation of a tower of legislation, rising storey on storey, like Babel of old, and like it ending in universal confusion. This is, we think, most discreditably to the common sense of the nation at large. This is the Reform which in our judgment is really needed. When the House of Commons was lately indulging in that most exquisite and enjoyable of all self-flatteries, and inferentially exalting itself at the expense of the Admiralty, would that some member had bethought him to remind the house that their own proceedings afforded the best parallel to, and illustration of, what they were condemning.

Hence arises the necessity of every now and again gathering together the fragments of past legislation into one body, generally done by some lawyer to whom freedom from briefs leaves sufficient leisure for the task; and thus instead of some thirty or forty acts of parliament we quote from “Tomkin’s Poor Law,” or “Smith’s Municipal Corporations,” and similarly we are under obligations for the labours of Dr. Neilson Hancock, who has “classified, in the form of a code, the Public Health Enactments for Ireland”—as he words it in the first clause of his Report. The work undertaken by Dr. Hancock is one not merely meritorious, but absolutely necessary to the carrying out of an act which imposes duties and intrusts powers of a most important nature on bodies of men who are frequently slow to perceive any necessity for Sanitary Reform, willing to evade the performance of duties generally unpopular and costly in execution, and when called upon and set in motion not over-intelligent as to what their duties are; it is plain therefore that a good and useful work is done in codifying the legislation on the

subject, and bringing into one focus all the still unextinguished rays scattered over the statutes that have passed during the last fifty years; and when doing this it would have been desirable to have prefaced the code by such a general analysis of its provisions as Dr. Hancock has given commencing on page 18 of the Report and extending to the end; but this should have been only a preface, the book itself should have been the code; as it is, the real matter of the book, containing seventy-one closely-printed pages, is relegated to an appendix, and the whole appears before the public under the disguise of a Report. Deducting the analytic preface we have before mentioned, the Report consists of less than three pages, in which Dr. Hancock gives the history of the Act of 1866. Passing over the absurdity of gravely telling Lord Naas the history of a measure which he himself had a principal hand in framing, this portion of the Report serves to show that Dr. Hancock’s mode of expressing himself in the English language leaves that faint and hazy impression on the mind that the first reading of a complex parliamentary bill does. We have read this history twice, and we are not yet quite clear as to what was done last session, or rather what was left undone—bills, acts, and codes are jumbled up in such disorder that they leave the mind fairly confused. We would recommend Dr. Hancock in his next edition either to commence his preface—for that we insist his observations should be thrown into—with the classification of the enactments, or to read over the preceding pages carefully to endeavour to remember what he intended to say, and to express what he means in simple English; thus we may guess, but he may as well tell his readers to whom the Town Council of Dublin enclosed the report of Dr. Mapother, and he may feel as we do that the fact of more perfect legislation coming in force ten days after the Irish Privy Council issued their orders about the cholera, does not “illustrate the defects complained of;” it rather shows that somebody—we do not know who—ought to have known that those orders would be superseded—at least so we gather from Dr. Hancock—and have delayed the action of the Privy Council until it received the additional weight and effect afforded to it by the new legislation then coming into force.

CANADIAN SCENES—I.

QUEBEC, the ancient capital of the Canadas, is strongly and picturesquely situated in the embouchure of the St. Charles River on the St. Lawrence, opposite Point Levi. The name is derived from the French—its Indian name sounds more poetical, as it was called by the Huron Indians Stadacona—Quebec, or “Quebec,” by Jacques Cartier, in allusion to the promontory projecting over the St. Lawrence and St. Charles Rivers like a beak.

The upper and lower towns, with the Faubourg of St. Rochs, has a mixed population of over sixty thousand inhabitants—one half of whom adhere to the motto of “*Notre langue, nos institutions et nos lois*”—“Our tongue, our institutions, and our laws.” The Irish element is becoming a match in election times for the French—they frequently return the candidate they back, particularly when aided by the Rouge party.

There are no architectural decorations in the way of public buildings in Quebec, with the exception of the Government House (*ci devant* the Music Hall), and the new Roman Catholic College; the Protestant, and Irish Roman Catholic Cathedrals have nothing in

the way of art to recommend them to the architect of taste.

The hotels in this city are very good, but I think too limited in accommodation for the host of Yankees who make this the *Ultima Thule* of their summer tour. When I was sojourning here a few years ago, I put up at the “Clarendon,” which was then kept by a fellow-countryman; the *cuisine* was admirably managed by the hostess, Mrs. O’Neill.

I made a few acquaintances while in Quebec, of whom more anon.

The traveller, whether *pour la chasse ou a passer le temps*, has not far to go north of Quebec till he enters the hunting-grounds of the red man, and bids farewell to civilization.

Trip to the Falls of Montmorenci and Lake St. Charles. Our party consisted of four as dissimilar beings as possible in habits and manners, as well as in appearance, whom I’ll make an effort at describing—William H. Grattan, C.E., aged about 29, low in stature but high in spirits—an Indian in almost every trait of character—fond of hunting (*a l’Indien*) and fishing, expert at the *couteau de chasse*, and also at the use of *la longue carabine*. St. Michel Gury—aged about 23—was not very unlike our first hero, inasmuch as he had nearly all the Indian traits of character. Those two “b(h)oyes,” would while away the evenings dancing the Indian war-dance about our camp fire—making unearthly noises; yelling; writhing their painted faces; and contorting their supple bodies into every imaginable hideous shape and position. Harry Rogerson—aged about 26—formerly in the Ordnance department stationed in the West Indies, was rather a whimsical, vain person, particularly when feats of strength or activity was the subject of our conversation; he would “wrestle walk, or run, any man in Canada over a sporting country (except an Indian),” he had an aversion to be a competitor of the family of Deerfoot.

From the summit of a hill about eight miles from Quebec we get the first glimpse of the lakes, situated as they are, surrounded on every side by ranges of hills covered with Alpine firs, and the dark green hemlock, whose unvarying hue gives an eternal appearance of spring to all sylvan scenery in the Canadas, and the United States as well.

The first evening (it being then the fall of the year 186—) we thought it better that the four of us should “camp out” on a small island on the lower lake—the intense heat of the weather encouraging it; accordingly, to save ourselves from the annoyance of the mosquitoes we had to light a fire, and keep it constantly fed with fuel, of which there was an abundant supply everywhere at hand. I took my rod as soon as “the powerful King of Day” surmounted the top of the neighbouring mountains. I had better success than my friend Grattan (who was a keen angler), and shortly got a “rise,” played the game dexterously as I thought, when lo! I was surprised to find, not a salmon-trout, “black-bass,” or even “a bull-pout,” but a most gigantic bull frog, about 2 lbs. in weight—with arms and legs as long as those of a new-born babe, dangling at the end of my line. The b(h)oyes had the grin at me now. The “Loon” ever and anon giving calls (which Grattan used to mimic to life) reminded us of the approach of bad weather; so we adjourned to the upper lake, on the banks of which were settlers from “green Erin of the streams;” these explorers carried with them here that virtue which singles out the Irishman as the first in the human family for acts of benevolence and hospitality for which no other nation under the sun is so distinguished. The name of this family who had settled here

for years was Dunne. Jemmy, one of the children, was hunchbacked; he met with this disaster felling timber when he came to this country eight or ten years since. He was as skilful as Grattan or Gogy in tracking a bear or a moose deer. We had always a supply of fresh trout while here—thanks to Jemmy and Grattan and Gogy, who had only to throw in their lines within pistol shot of the shanty, and they never came home empty. The trout and other fish in this country are not of such fastidious or epicurean tastes as they are with us at home. I have seen some splendid fish caught with a worm or piece of pork at the end of a ball of twine—baits the trout would not look at in our rivers of Europe. The fish of Canada are, therefore, more unsophisticated than the members of the same family in Shannon or Thames, in Loughs Corrib or Lomond.

There were some Caribboo and moose deer shot hereabouts last winter by an Indian of Lorette named "Paul." I wore a pair of mocassins made from the Caribboo and lunched off the muffle of the moose that was shot here by the forenamed Indian,—at least so master Billy Button, of the hotel at Lorette, informed me afterwards.

Falls of La Montmorenci. Shifted our camp after a few successful days' fishing at our Hibernian friend's to the "Natural Steps," or, as the French more appropriately call them, "La Gallerie-de chute." These falls are the grandest and loftiest in the Canadas—travellers say 250 feet of unbroken fall—beats brother Jonathan's boast, Niagara, hollow. They have been spanned by a nice-looking (but unfortunate) suspension bridge, which, strange to tell, on the morning of its being opened for public traffic fell in, and with it an aged woman and little boy and their donkey and cart, hurrying them to the profound abyss below. They were from St. Anne's-en-Bas, and were escorted by big Jean-de-la-Longtour, who had some presentiment of the fate that awaited them, and did not venture on the fatal bridge at the time. The donkey and cart were found next day at low tide. The woman and boy have never since been discovered. It is thought they were engulfed or swallowed up in the bowels of the earth! as there is every appearance of a maelstrom being formed where the shoot from the fall meets the St. Lawrence; it is also surmised that the water constantly falling about the same spot will have bored for itself a hole into the soft limestone formation.

I knew the parties who had the superintendence of the bridge under discussion, and certainly must confess they were unused to such a mode of construction. The engineer was a young Irishman, a member I.C.E., Dublin, and is since then pursuing his profession to his advantage in Brazil under Mr. Brunlees. The contractors were two Englishmen, protégés of Betts and Peto. It is to be hoped they have been more successful since with that colossal firm; they certainly were rather "green" at the business, and required much more care and experience than justified them at the time in sacrificing the lives of even two mere Canadian habitants.

The suspension chains or wire cables were well made and tough, a proof of this assertion being evident from their hanging to the northern tower, and were suspended for days over the falls after the bridge fell in.

The "Natural Steps" (excuse this digression), immediately above the falls, form a very curious and instructive lesson to the geologist and engineer. This gallery is a succession of steps in tiers continuing up the Montmorenci for at least half a mile. The river has fairly cut out for itself a rapid channel through the

longitudinal limestone strata formation, so narrow that I found little difficulty in jumping across.

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The proceedings of the day are intended to honour memory of a great artist, and to commemorate in most graceful and appropriate manner the heroic ing of a distinguished career. It is now many years since I first saw Gustavus Brooke, and the impression I then formed of his marvellous gifts was irremediable by the subsequent verdict of every race by which the English language is spoken, and by whom the genius of Shakspeare is held in reverence. Endowed by nature, his intellectual faculties were of the highest order. Cast in the finest mould of manly beauty, he walked the stage with a ease and dignity unrivalled. A noble head, proudly set; a splendid eye, terrible in its flash, or tender in its glance; a voice—when I first heard its tones—full, deep, and exquisitely modulated—an organ of wondrous range and compass that it expressed every varied emotion and passion of the soul with the fidelity of nature; and Brooke was as natural as he was versatile. Since the days of the elder Kean there have been artists the equals, for aught I know the equals, of Brooke; but in spontaneity, impulse, naturalness, not one has approached him. Unassisted by nature is still but art. You may admire, you may applaud its efforts, but you are carried away by it. One is, as it were, involuntarily on the watch against being surprised by him in the mere artist there is an artificiality which never can deceive the unerring criticism of the public; but Brooke was a man of genius, who possessed that faculty so essential to a really great actor, the faculty of identifying himself with the character he portrayed. In that lay his power and his success. Others might have had as fine a conception of the character, and as keen an appreciation of its most delicate shades; but he felt as he acted, and was for the time the personage he represented. Since the days of Young or Kemble there has been no such *Hamlet* as his; nor since old Kean electrified his audiences has *Othello* or *Sir Giles Overreach* had so powerful, so terrible a delineator as the man whose loss the stage deplores. Vivid at this moment is my memory of his *Hamlet*, though witnessed fully twenty years since, or more. His voice was then in all its freshness, and of surpassing beauty; his carriage was upheld with grace and dignity; his bearing was that of Shakspeare's prince and gentleman; and so natural was the actor, that the character, respecting which whole libraries of speculation and controversy have been written, seemed to me so lucid in its simplicity and directness as to mock at the mysterious significance imparted to it by commentators. And how versatile was this really great artist! He who awed you by his kingly majestic or heroic dignity, or sent a shudder through your veins as the duped *Othello* savagely cries for "blood," or the frenzied *Lear* calls down the vengeance of heaven on his unnatural daughters, the same actor convulsed you with laughter as *O'Callaghan on his Last Legs*, or as *Pierce O'Hara, the Galway Attorney*. In the delineation of Irish character he was inimitable; but in the wildest fun or the broadest farce he never offended the susceptibilities of Irishmen, for he was not only an Irishman himself, but a gentleman. Born in this historic city, he never forgot his native land; nor did he, as some of his countrymen in various walks of life have done, ever seek to impress on strangers the notion that he was an Englishman. To Gustavus Brooke belongs the honor of having, if not literally founded, at least successfully developed the drama in Australia, in which greatest and most prosperous of our colonies he won the admiration of all who witnessed his matchless performances, or appreciated his worth as a man. Gustavus Brooke was not an angel of virtue. Like other men, he had his defects; but he had a large soul, a generous nature, and an open hand, and never was appeal made in vain to his sympathy or compassion. What charities he assisted, what good works he helped to promote, what misery he soothed, what distress he averted or relieved, I cannot stop to say; the record has been preserved above. And now comes the last awful act in life's eventful drama. No mimic scene, no artificial stage, no dressing for a part here; but fitting scene, indeed, for the terrible tragedy about to be enacted. On a raging sea, beneath a frowning sky, across which tempest-torn clouds are madly flying, you behold a mighty ship tossing wildly on the furious waves, writhing and groaning as a living thing that is wrestling in its

last gasping agony. No smoke from the huge funnel now; the invading sea has quenched the fires for ever. With shattered masts, and sails torn in ribbons, the "London" is desperately surging on, every mad plunge hurrying her nearer to the inevitable catastrophe. Clustered on her deck are hundreds of human beings, drenched by the waves, and shivering in the winter blast, but soothed by the voice of prayer, and sustained by the Christian's hope in God's mercy. Conspicuous for his calmness and serenity is one who, now that all human effort is unavailing, awaits the dread moment with quiet heroism. Bareheaded and barefooted, thinly clad, in soaked trousers and Crimean shirt, he had worked at the pumps while a chance remained; but now that the waves leap with a wilder frenzy, and the ship is fast preparing for her final plunge, he stands unabashed, but awed and silent, in the presence of death. A more furious blast of the tempest, a madder leap of the fierce ravenous waves, and the "London," with its living freight, is lost to human sight for ever. May not one, quoting his famous author, from whose pages he drew his loftiest inspiration, say—

"There was nothing in his life
Became him better than the ending of it."

When the tidings of this terrible disaster were read by the friends of the great actor—those who had known and loved the man—the idea of commemorating his fame by a suitable memorial naturally suggested itself to their minds. And what memorial could be more touching in its suggestiveness, or more useful in its nature, than this life-boat which is to bear his name? The shores of these islands are annually fringed with wrecks, and the corpses of mariners and emigrants are constantly flung upon their shingle, or rock, or sand. Ships and men are shattered on our naked promontories, and the despairing cry of the drowning wretch is often heard amidst the lull of the tempest by commiserating spectators on the land, who are compelled to look on in helpless horror at the dying agonies of their fellow-creatures. Happily science has come to the aid of human sympathy, and the life-boat now carries hope to the despairing, as, propelled by strong hands and valiant hearts, it nears the shattered wreck, to which human creatures—perhaps mothers clutching their infants in their failing grasp—still cling amidst the fury of the storm. Watched with scarcely less of agony from shore than from the straining ship, the life-boat rises in triumph on the crest of an angry wave, and, battling with the savage gale, reaches the wreck to bear from it those who stand on the very threshold of the grave. Our coasts are wild; the storms that lash them are terrible; but nowhere are there stronger arms or braver hearts than are to be found on the shores of this our island; and to the humanity, courage, daring, and fortitude of Irishmen is committed this memorial of a gifted countryman who bore himself heroically in the presence of death. It must be our fervent wish that no necessity may ever occur for the use of this life-boat; but should the signal-gun proclaim the awful fact that there are living souls in dire peril, we pray that so well may the intentions of the friends and admirers of the great Irish actor be realised, that his memory may be kept fresh and green by the gallant deeds done in his name. I now beg to hand over this boat—"The G. V. Brooke"—to the custody of the National Life-boat Association, to be placed on the Poolbeg station—that nearest to the birth-place of him whose name it bears.

SCIENTIFIC AND ARTISTIC INSTRUCTION.

In an address to the teachers of the Model School, by Mr. Buckmaster, of the Science and Art Department, South Kensington, the scheme adopted by Government for aiding instruction in Elementary Science and Drawing, was fully explained. He said that a sum of money was annually voted by Parliament, and expended by the Science and Art Department with the sanction of the Lord President of the Council on Education. The chief object of this vote is to encourage and aid the industrial classes in obtaining a knowledge of those arts and sciences which are likely to improve and develop the arts, commerce, and manufactures of the country. In 1859 a very comprehensive minute was passed for aiding instruction in the following subjects:—Practical, Plain, and Descriptive Geometry; Mechanical and Machine Drawing; Building Construction; Elementary Mathematics; Higher Mathematics; Theoretical Mechanics; Applied Mechanics; Acoustics, Light, and Heat; Magnetism, and Electricity; Inorganic Chemistry; Organic Chemistry; Geology; Mineralogy; Animal Physiology; Zoology; Vegetable Physiology; Systematic Botany; Mining; Metallurgy; Navigation; Nautical Astronomy; Steam; Physical Geography. An examination will be held in Dublin next November for the purpose of granting certificates to persons desirous of teaching any of the sciences just mentioned. Any person may attend this examination by sending in his or her name to the Secretary of the Science and Art Department by the middle of

October, simply stating the subject or subjects in which the candidate proposes to be examined. Certificates of three grades are awarded in each subject, and that no person shall be prevented from taking these certificates on account of their circumstances, railway fare and personal expenses will be paid to all successful candidates. By this arrangement the State avoids all the responsibility and expense of educating science teachers. I think about 100 persons in Ireland, chiefly teachers of elementary schools, have taken these certificates, and, if there were another 100, there would be no difficulty in finding employment. Wherever I go I hear the statement—we want a teacher. Where a class for the teaching of elementary science is established, there must be a committee of not less than five responsible persons, who will have to carry out the instructions of the department, and be responsible for the safe custody and use of all the apparatus and diagrams the department has assisted to purchase. Through the agency of this committee the department will hold annually, in May, an examination of science classes by means of printed papers forwarded to the local committee. Any person, whether taught by a certificated school teacher or not, may attend this local examination by making the necessary arrangements with the local committee, and paying a fee of not more than 2s. 6d., which may, at the option of the local committee, be remitted.

The successful pupils at the May examination will be arranged under five grades or classes. The fifth or lowest grade is of a very elementary character, and such as is within the reach of almost all the boys in the Model School. Those who attain a higher degree of proficiency will pass in the fourth, third, second, and first grades. To the first, second, and third grades are given Queen's prizes, which consist of books and instruments selected by the pupils from tests forwarded for that purpose. To the four pupils obtaining the highest number of marks in each subject Queen's medals are awarded. These medals are not awarded to middle class pupils over 17 years of age, but an honorary certificate is given instead. In addition to these medals scholarships of the value of £50 a year for three years either at the School of Mines in London or School of Science in Dublin are awarded. One of these scholarships was given on the results of the last May examination to a chemist's assistant of this city. Payments are made to certificated science teachers on account of the instruction given; either in free-hand drawing, practical geometry, or model drawing in such a school, a sum of 1s. will be paid; on every child showing some proficiency, a sum of 2s.; on every child who attains a standard of moderate excellence, 3s. a night; class or school is a class meeting for instruction after six o'clock in the evening, to which pupils are admitted on the payment of such fees as are within the reach of boys who have left school, and those who support themselves by manual labour. The department will pay annually to the local committee of such a class a sum of 10s. on every pupil over twelve years of age who shall pass in the second grade, either in free-hand drawing from the flat, practical geometry, drawing from models, perspective, or mechanical drawing. Teachers of drawing, on whose account payments are made, must hold a certificate of the second grade by passing in the five subjects just mentioned. Annual local examinations will be held in March, and persons desirous of becoming teachers may attend the nearest place of examination. A class for instruction in science or drawing may be held in any suitable room. The arrangements between the teacher as to fees, time of instruction, and the subjects taught, are matters of local arrangement. The certificates for teaching science or drawing are within the reach of a large number of national teachers. Grants of 50 per cent. will be made towards the purchase of examples and apparatus for instruction in science and drawing. I trust those who take an interest in the educational work of Ireland will give the scheme that consideration which its importance demands to the pupils of science classes who have received not less than 25 lessons between the annual local examinations, and these payments will either be £1, £2, £3, £4, or £5 on each pupil in each subject, according to the grade in which the pupil passes. Payments on this scale are made up to £60, and above that sum a slight reduction is made on the payments. Although this scheme has only been in operation a few years, we have established in Ireland 60 classes with about 800 pupils. I trust by next May the number of pupils and classes will be doubled, but this will chiefly depend on the number of candidates who take certificates next November. Those who intend taking certificates should organize classes at once in the subjects in which they propose to be examined in. There will be a difficulty in giving the required number of lessons before the May examinations. The main feature of this scheme is a system of examinations in a science and a payment on results. Teachers and others, if they wish, may greatly increase their usefulness during the winter

for years was Dunne. Jemmy, one of the children, was hunchbacked; he met with this disaster felling timber when he came to this country eight or ten years since. He was as skilful as Grattan or Gagy in tracking a bear or a moose deer. We had always a supply of fresh trout while here—thanks to Jemmy and Grattan and Gagy, who had only to throw in their lines within pistol shot of the shanty, and they never came home empty. The trout and other fish in this country are not of such fastidious or epicurean tastes as they are with us at home. I have seen some splendid fish caught with a worm or piece of pork at the end of a ball of twine—baits the trout would not look at in our rivers of Europe. The fish of Canada are, therefore, more unsophisticated than the members of the same family in Shannon or Thames, in Loughs Corrib or Lomond.

There were some Caribboo and moose deer shot hereabouts last winter by an Indian of Lorette named "Paul." I wore a pair of mocassius made from the Caribboo and lunched off the mouffle of the moose that was shot here by the forenamed Indian,—at least so master Billy Button, of the hotel at Lorette, informed me afterwards.

Falls of La Montmorenci. Shifted our camp after a few successful days' fishing at our Hibernian friend's to the "Natural Steps," or, as the French more appropriately call them, "La Gallerie-de chute." These falls are the grandest and loftiest in the Canadas—travellers say 250 feet of unbroken fall—beats brother Jonathan's boast, Niagara, hollow. They have been spanned by a nice-looking (but unfortunate) suspension bridge, which, strange to tell, on the morning of its being opened for public traffic fell in, and with it an aged woman and little boy and their donkey and cart, hurrying them to the profound abyss below. They were from St. Anne's-en-Bas, and were escorted by big Jean-de-la-Longtour, who had some presentiment of the fate that awaited them, and did not venture on the fatal bridge at the time. The donkey and cart were found next day at low tide. The woman and boy have never since been discovered. It is thought they were engulfed or swallowed up in the bowels of the earth! as there is every appearance of a maelstrom being formed where the shoot from the fall meets the St. Lawrence; it is also surmised that the water constantly falling about the same spot will have bored for itself a hole into the soft limestone formation.

I knew the parties who had the superintendence of the bridge under discussion, and certainly must confess they were unused to such a mode of construction. The engineer was a young Irishman, a member I.C.E., Dublin, and is since then pursuing his profession to his advantage in Brazil under Mr. Brunlees. The contractors were two Englishmen, protégés of Betts and Peto. It is to be hoped they have been more successful since with that colossal firm; they certainly were rather "green" at the business, and required much more care and experience than justified them at the time in sacrificing the lives of even two mere Canadian habitants.

The suspension chains or wire cables were well made and tough, a proof of this assertion being evident from their hanging to the northern tower, and were suspended for days over the falls after the bridge fell in.

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MR. MAGUIRE, M.P., ON G. V. BROOKE.

On Thursday, the 20th ult., the interesting ceremony of launching the *Gustavus Vaughan Brooke*, as the new life-boat for Dublin harbour has been named, took place at the North-wall in the presence of a large and interested body of spectators and the widow of the unfortunate tragedian. Mr. John Francis Maguire, M.P. for Cork, in handing over the life-boat to the National Life-boat Institution, paid the following just and generous tribute to the memory of a great artist:—

The proceedings of the day are intended to honour the memory of a great artist, and to commemorate in the most graceful and appropriate manner the heroic closing of a distinguished career. It is now many years since I first saw Gustavus Brooke, and the impression I then formed of his marvellous gifts was confirmed by the subsequent verdict of every race by whom the English language is spoken, and by whom the genius of Shakspeare is held in reverence. Grandly endowed by nature, his intellectual faculties likewise were of the highest order. Cast in the finest mould of manly beauty, he walked the stage with a grace and dignity unrivalled. A noble head, proudly borne; a splendid eye, terrible in its flash, or tender in its glance; a voice—when I first heard its tones—rich, full, deep, and exquisitely modulated—an organ of such wondrous range and compass that it expressed every varied emotion and passion of the soul with the fidelity of nature; and Brooke was as natural as he was versatile. Since the days of the elder Kean there have been artists the equals, for aught I know the superiors, of Brooke; but in spontaneity, impulse, power, naturalness, not one has approached him. Art unassisted by nature is still but art. You may admire, you may applaud its efforts, but you are never carried away by it. One is, as it were, instinctively on the watch against being surprised by art, for in the mere artist there is an artificiality which never can deceive the unerring criticism of the senses; but Brooke was a man of genius, who possessed that faculty so essential to a really great actor, of thoroughly identifying himself with the character he portrayed. In that lay his power and his success. Others might have had as fine a conception of a part, and as keen an appreciation of its most delicate shades; but he felt as he acted, and was for the time the personage he represented. Since the days of Young or Kemble there has been no such *Hamlet* as his; nor since old Kean electrified his audiences has *Othello* or *Sir Giles Overreach* had so powerful, so terrible a delineator as the man whose loss the stage deplores. Vivid at this moment is my memory of his *Hamlet*, though witnessed fully twenty years since, or more. His voice was then in all its freshness, and of surpassing beauty; his carriage was upheld with grace and dignity; his bearing was that of Shakspeare's prince and gentleman; and so natural was the actor, that the character, respecting which whole libraries of speculation and controversy have been written, seemed to me so lucid in its simplicity and directness as to mock at the mysterious significance imparted to it by commentators. And how versatile was this really great artist! He who awed you by his kingly majestic or heroic dignity, or sent a shudder through your veins as the duped *Othello* savagely cries for "blood," or the frenzied *Lear* calls down the vengeance of heaven on his unnatural daughters, the same actor convulsed you with laughter as *O'Callaghan on his Last Legs*, or as *Pierce O'Hara, the Galway Attorney*. In the delineation of Irish character he was inimitable; but in the wildest fun or the broadest farce he never offended the susceptibilities of Irishmen, for he was not only an Irishman himself, but a gentleman. Born in this historic city, he never forgot his native land; nor did he, as some of his countrymen in various walks of life have done, ever seek to impress on strangers the notion that he was an Englishman. To Gustavus Brooke belongs the honor of having, if not literally founded, at least successfully developed the drama in Australia, in which greatest and most prosperous of our colonies he won the admiration of all who witnessed his matchless performances, or appreciated his worth as a man. Gustavus Brooke was not an angel of virtue. Like other men, he had his defects; but he had a large soul, a generous nature, and an open hand, and never was appeal made in vain to his sympathy or compassion. What charities he assisted, what good works he helped to promote, what misery he soothed, what distress he averted or relieved, I cannot stop to say; the record has been preserved above. And now comes the last awful act in life's eventful drama. No mimic scene, no artificial stage, no dressing for a part here; but fitting scene, indeed, for the terrible tragedy about to be enacted. On a raging sea, beneath a frowning sky, across which tempest-torn clouds are madly flying, you behold a mighty ship tossing wildly on the furious waves, writhing and groaning as a living thing that is wrestling in its

last gasping agony. No smoke from the huge funnel now; the invading sea has quenched the fires for ever. With shattered masts, and sails torn in ribbons, the "*London*" is desperately surging on, every mad plunge hurrying her nearer to the inevitable catastrophe. Clustered on her deck are hundreds of human beings, drenched by the waves, and shivering in the winter blast, but soothed by the voice of prayer, and sustained by the Christian's hope in God's mercy. Conspicuous for his calmness and serenity is one who, now that all human effort is unavailing, awaits the dread moment with quiet heroism. Bareheaded and barefooted, thinly clad, in soaked trousers and Crimean shirt, he had worked at the pumps while a chance remained; but now that the waves leap with a wilder frenzy, and the ship is fast preparing for her final plunge, he stands unabashed, but awed and silent, in the presence of death. A more furious blast of the tempest, a madder leap of the fierce ravenous waves, and the "*London*," with its living freight, is lost to human sight for ever. May not one, quoting his famous author, from whose pages he drew his loftiest inspiration, say—

"There was nothing in his life
Became him better than the ending of it."

When the tidings of this terrible disaster were read by the friends of the great actor—those who had known and loved the man—the idea of commemorating his fame by a suitable memorial naturally suggested itself to their minds. And what memorial could be more touching in its suggestiveness, or more useful in its nature, than this life-boat which is to bear his name? The shores of these islands are annually fringed with wrecks, and the corpses of mariners and emigrants are constantly flung upon their shingle, or rock, or sand. Ships and men are shattered on our naked promontories, and the despairing cry of the drowning wretch is often heard amidst the lull of the tempest by commiserating spectators on the land, who are compelled to look on in helpless horror at the dying agonies of their fellow-creatures. Happily science has come to the aid of human sympathy, and the life-boat now carries hope to the despairing, as, propelled by strong hands and valiant hearts, it nears the shattered wreck, to which human creatures—perhaps mothers clutching their infants in their failing grasp—still cling amidst the fury of the storm. Watched with scarcely less of agony from shore than from the straining ship, the life-boat rises in triumph on the crest of an angry wave, and, battling with the savage gale, reaches the wreck to hear from it those who stand on the very threshold of the grave. Our coasts are wild; the storms that lash them are terrible; but nowhere are there stronger arms or braver hearts than are to be found on the shores of this our island; and to the humanity, courage, daring, and fortitude of Irishmen is committed this memorial of a gifted countryman who bore himself heroically in the presence of death. It must be our fervent wish that no necessity may ever occur for the use of this life-boat; but should the signal-gun proclaim the awful fact that there are living souls in dire peril, we pray that so well may the intentions of the friends and admirers of the great Irish actor be realised, that his memory may be kept fresh and green by the gallant deeds done in his name. I now beg to hand over this boat—"The G. V. Brooke"—to the custody of the National Life-boat Association, to be placed on the Poolbeg station—that nearest to the birth-place of him whose name it bears.

SCIENTIFIC AND ARTISTIC INSTRUCTION.

In an address to the teachers of the Model School, by Mr. Buckmaster, of the Science and Art Department, South Kensington, the scheme adopted by Government for aiding instruction in Elementary Science and Drawing, was fully explained. He said that a sum of money was annually voted by Parliament, and expended by the Science and Art Department with the sanction of the Lord President of the Council on Education. The chief object of this vote is to encourage and aid the industrial classes in obtaining a knowledge of those arts and sciences which are likely to improve and develop the arts, commerce, and manufactures of the country. In 1859 a very comprehensive minute was passed for aiding instruction in the following subjects:—Practical, Plain, and Descriptive Geometry; Mechanical and Machine Drawing; Building Construction; Elementary Mathematics; Higher Mathematics; Theoretical Mechanics; Applied Mechanics; Acoustics, Light, and Heat; Magnetism, and Electricity; Inorganic Chemistry; Organic Chemistry; Geology; Mineralogy; Animal Physiology; Zoology; Vegetable Physiology; Systematic Botany; Mining; Metallurgy; Navigation; Nautical Astronomy; Steam; Physical Geography. An examination will be held in Dublin next November for the purpose of granting certificates to persons desirous of teaching any of the sciences just mentioned. Any person may attend this examination by sending in his or her name to the Secretary of the Science and Art Department by the middle of

October, simply stating the subject or subjects in which the candidate proposes to be examined. Certificates of three grades are awarded in each subject, and that no person shall be prevented from taking these certificates on account of their circumstances, railway fare and personal expenses will be paid to all successful candidates. By this arrangement the State avoids all the responsibility and expense of educating science teachers. I think about 100 persons in Ireland, chiefly teachers of elementary schools, have taken these certificates, and, if there were another 100, there would be no difficulty in finding employment. Wherever I go I hear the statement—we want a teacher. Where a class for the teaching of elementary science is established, there must be a committee of not less than five responsible persons, who will have to carry out the instructions of the department, and be responsible for the safe custody and use of all the apparatus and diagrams the department has assisted to purchase. Through the agency of this committee the department will hold annually, in May, an examination of science classes by means of printed papers forwarded to the local committee. Any person, whether taught by a certificated school teacher or not, may attend this local examination by making the necessary arrangements with the local committee, and paying a fee of not more than 2s. 6d., which may, at the option of the local committee, be remitted.

The successful pupils at the May examination will be arranged under five grades or classes. The fifth or lowest grade is of a very elementary character, and such as is within the reach of almost all the boys in the Model School. Those who attain a higher degree of proficiency will pass in the fourth, third, second, and first grades. To the first, second, and third grades are given Queen's prizes, which consist of books and instruments selected by the pupils from tests forwarded for that purpose. To the four pupils obtaining the highest number of marks in each subject Queen's medals are awarded. These medals are not awarded to middle class pupils over 17 years of age, but an honorary certificate is given instead. In addition to these medals scholarships of the value of £50 a year for three years either at the School of Mines in London or School of Science in Dublin are awarded. One of these scholarships was given on the results of the last May examination to a chemist's assistant of this city. Payments are made to certificated science teachers on account of the instruction given; either in free-hand drawing, practical geometry, or model drawing in such a school, a sum of 1s. will be paid; on every child showing some proficiency, a sum of 2s.; on every child who attains a standard of moderate excellence, 3s. a night; class or school is a class meeting for instruction after six o'clock in the evening, to which pupils are admitted on the payment of such fees as are within the reach of boys who have left school, and those who support themselves by manual labour. The department will pay annually to the local committee of such a class a sum of 10s. on every pupil over twelve years of age who shall pass in the second grade, either in free-hand drawing from the flat, practical geometry, drawing from models, perspective, or mechanical drawing. Teachers of drawing, on whose account payments are made, must hold a certificate of the second grade by passing in the five subjects just mentioned. Annual local examinations will be held in March, and persons desirous of becoming teachers may attend the nearest place of examination. A class for instruction in science or drawing may be held in any suitable room. The arrangements between the teacher as to fees, time of instruction, and the subjects taught, are matters of local arrangement. The certificates for teaching science or drawing are within the reach of a large number of national teachers. Grants of 50 per cent. will be made towards the purchase of examples and apparatus for instruction in science and drawing. I trust those who take an interest in the educational work of Ireland will give the scheme that consideration which its importance demands to the pupils of science classes who have received not less than 25 lessons between the annual local examinations, and these payments will either be £1, £2, £3, £4, or £5 on each pupil in each subject, according to the grade in which the pupil passes. Payments on this scale are made up to £60, and above that sum a slight reduction is made on the payments. Although this scheme has only been in operation a few years, we have established in Ireland 60 classes with about 800 pupils. I trust by next May the number of pupils and classes will be doubled, but this will chiefly depend on the number of candidates who take certificates next November. Those who intend taking certificates should organize classes at once in the subjects in which they propose to be examined in. There will be a difficulty in giving the required number of lessons before the May examinations. The main feature of this scheme is a system of examinations in a science and a payment on results. Teachers and others, if they wish, may greatly increase their usefulness during the winter

evenings, and the payments and results will no doubt be very acceptable to their incomes. The regulations for instruction in drawing in schools and evening classes are in many respects similar. An elementary or primary school is one established for the education of children belonging to those who support themselves by manual labour.

NEW ROMAN CATHOLIC CHURCH, WOLVERHAMPTON.

ONE of our illustrations is a new Roman Catholic church to be built at Wolverhampton, from the designs of E. Welby Pugin, Esq. The chief material used in the church is brick, colored ones being used for bands, as well as stone. The dressings to all the windows, doors, &c., are of stone. There is an almost entire absence of buttressing about this church, the effect of which is good. Attached to the church is a pretty parochial house, which possesses ample accommodation, &c. It is gratifying for us to be enabled occasionally to present to our readers specimens of English building, shewing the increasing esteem in which our publication is held in the sister country.

THE APPLICATION OF CONCRETE TO FIREPROOF CONSTRUCTIONS.*

AMONGST the various methods of fireproof construction, as applied to the floors, ceiling, and roofs of buildings, which have been in use within the last twenty years, those in which concrete forms the fire resisting medium have been most frequently adopted.

The main reason for this preference no doubt is that the horizontal form in which it is generally disposed suits best the requirements of modern construction.

Brick arches, though used almost without exception to carry the floors of the large fireproof mills and warehouses of the manufacturing districts, have disadvantages which almost preclude their use in buildings of a more general or domestic character. They require walls and girders of great strength to sustain their weight and to withstand the outward thrust which they exert; and the depth which they occupy on account of their rise when added to the board and joist arrangement above, and the ceiling underneath, is so great as to involve a considerable increase of height in the building to obtain the same clear space between the floors and ceilings of the rooms.

Of the systems of fireproofing in which concrete forms the chief element, that of Messrs. Fox and Barrett is the one which has been most extensively used (A). It consists of a series of light rolled iron joists, fixed 2 ft. apart, upon the lower flanges of which are placed fillets of wood, at intervals of 1 in. or 1½ in. Upon these a mass of concrete is thrown; the depth of the same being regulated to some extent by that of the iron joists, the concrete being generally brought up flush with their upper flanges. The whole is then paved or covered with an ordinary wood floor upon light sleeper joists. The underside of the floor receives a second series of wood fillets nailed transversely to the first, and at intervals of 12 in. or 15 in., and upon these the ceiling is then formed in the ordinary manner.

The concrete used in this construction, in common with all others in which ordinary lime forms an ingredient, is not strictly speaking a fireproof body. The cementing material which occupies the interstices between the fragments of stone or gravel becomes like ordinary mortar in setting a weak carbonate of lime, and, like the stone from which it was originally burnt, is reduced by calcination to a state of lime. This effect would undoubtedly be produced upon any lime concrete which formed part of the construction of a floor exposed to a severe conflagration.

The application of water to lime in the caustic state converts it of course to a hydrate, and while undergoing the change it assumes double its original bulk and falls to powder. The consequences, therefore, which might naturally be expected to ensue from the play of water from the fireman's hose upon concrete floors in a calcined state, would be the overthrow or fracture of the outer walls by their expansion. Some of the numerous instances of the destruction by fire of buildings, which were supposed to be secure from that danger, are probably owing to this circumstance.

I have more especially alluded to this radical de-

fect of ordinary concrete as a fireproof medium because in the system which I am about to describe a kind of concrete is employed which retains its cohesion and a considerable portion of its original strength, though water be thrown upon it while in a red hot state.

This method is a local invention, and is known as "Dennett's Fireproof Construction." I shall speak first of the composition of the concrete, and then proceed to describe the manner in which it is applied.

Gypsum, known chemically as the sulphate of lime, and which is one of the most perfect nonconductors of heat, is the most important constituent of the concrete, and is used in lieu of the ordinary lime as its cementing material. This gypsum, however, unlike that manufactured into plaster of Paris, which is used for ornamental purposes, undergoes a thorough calcination. The latter is simply roasted in ovens, the finer lumps of gypsum being carefully selected for the purpose. The effect of this roasting is merely to drive off so much of the water which enters into its chemical composition as to allow the gypsum to be ground by millstones. The rapidity of setting which is peculiar to this kind of plaster is owing to the fact of its having but little water to take up, in order to resume a state of consolidation.

For the manufacture of the plaster used in Dennett's concrete the coarser qualities of gypsum are used, such as—in fact except for this purpose—would be thrown aside as mere waste. These inferior qualities are largely impregnated with clay, with the beds of which it alternates. This clay when burnt becomes the very kind of material which is afterwards added artificially in the mixing up of the concrete. For this purpose any hard material, possessing a high degree of porosity, is used, such as furnace drosses, oolitic stone, or broken brick. The latter being, in most cases, readily procurable, is generally used. It is necessary that all dirt and dust should be carefully screened out, so as to prevent the choking of the pores of the brick.

The sizes of the lumps are graduated, so that the smaller ones shall fill up the interstices of the larger. By this means, and by considerable force used in consolidating the concrete, it is made to consist of a large proportion of the hard material, and its strength is much increased by the proper observance of these precautions. Some considerable time is occupied by the concrete in setting, as a greater amount of water is required to be taken up by the plaster on account of its thorough calcination. When the setting process is complete a degree of hardness is attained, however, to which that of the ordinary plaster of Paris will bear no comparison, and which is equal to that of the best cements.

The form in which the concrete is generally applied to the construction of the floors is that of an arch, or series of arches, with small rise (B). These are formed upon temporary centres, which may be removed after an interval varying from two to six days according to the state of the atmosphere and the size of the arches. Spans of from 6 ft. to 12 ft. can be bridged over in this manner, the thickness of the arch varying from 3 in. to 5 in. on the crown, and from 5 in. to 10 in. in the haunches. Rolled or rivetted iron girders form the intermediate support of the arches, while the outer haunches rest upon projections, or corbel courses in the brickwork. Floors of corridors and cottage rooms can be formed, however, without the aid of any joists or girders whatever (C). Of course the arch-form presupposes a certain amount of support from the abutments, but from the transverse strength, and thoroughly homogeneous character of the material very little if any lateral thrust is exerted on the outer walls. If a wood floor is required sleeper plates and light joists and boards are laid in the ordinary way (D); but if there is no necessity for this kind of finish, or if it is desirable to make the upper surface fireproof, the haunches of the arches may be filled up to a horizontal line and paved with stone, tiles, cement, or asphalt as may be desired. The cheapest and best kind of paving, however, is that which may be formed by the concrete itself. To do this, the porous material is graduated in size until the surface can be finished with the trowel (E). This surface can be executed in various tints and with different degrees of polish.

For bedroom floors this method of finish is particularly adapted. It is cleanly, non-absorbent, free from vibration, and therefore comparatively noiseless; and, what is a very important consideration (particularly in the crowded districts of large towns), affords no harbour for vermin. Any objection which might exist against these floors on the score of coldness may be removed by placing a sheet of hair felt or matting of cocoa fibres under the carpet. Floors of coarse plaster laid upon reeds or laths on the ordinary joists were formerly very common, and are still used to some extent in Nottingham and other towns of the Midland districts; and it is no doubt owing to this circumstance that the

destruction of a dwelling-house by fire is here a matter of very rare occurrence indeed. The mode of finishing the underside of these floors depends upon the character and architectural requirements of the building. For banks, offices, hospitals, and many other public buildings there is often no objection to the curved surface which the soffits of the arches present, and which are moreover well adapted to receive coloured decoration. Where, in buildings of more domestic character, a flat ceiling is indispensable, a series of light joists to receive the ordinary lathing is affixed to the lower flanges of the girders (F). As these form no part of the main construction of the floor their destruction in case of fire would not impair the stability of the arch which forms the fireproof medium. With regard to the strength of the concrete very severe tests were applied to some of the arches at the new town-hall at Hackney, under the direction of the district surveyor, and with very satisfactory results. These experiments were tried with reference to their capacity for sustaining dead pressure, and also with regard to their resistance to impact. In the latter case a rough block of stone, weighing 250 lbs., was dropped from a height of 14 ft. upon the centre of an arch which was but 3½ in. thick in the crown, and bruised, but did not break it; while another block, weighing 750 lbs., let fall from a similar height, upon an adjoining arch, went through with a clean fracture, causing no disturbance of the general construction. Some further idea of the strength and capabilities of the material may be formed when it is stated that vaults and domes have been executed therein at the new office of spans varying from 10 ft. to 35 ft. The vault of the latter dimension is semicircular on the section, and the concrete is 9 in. in thickness, with occasional ribs and groins to the side windows (G).

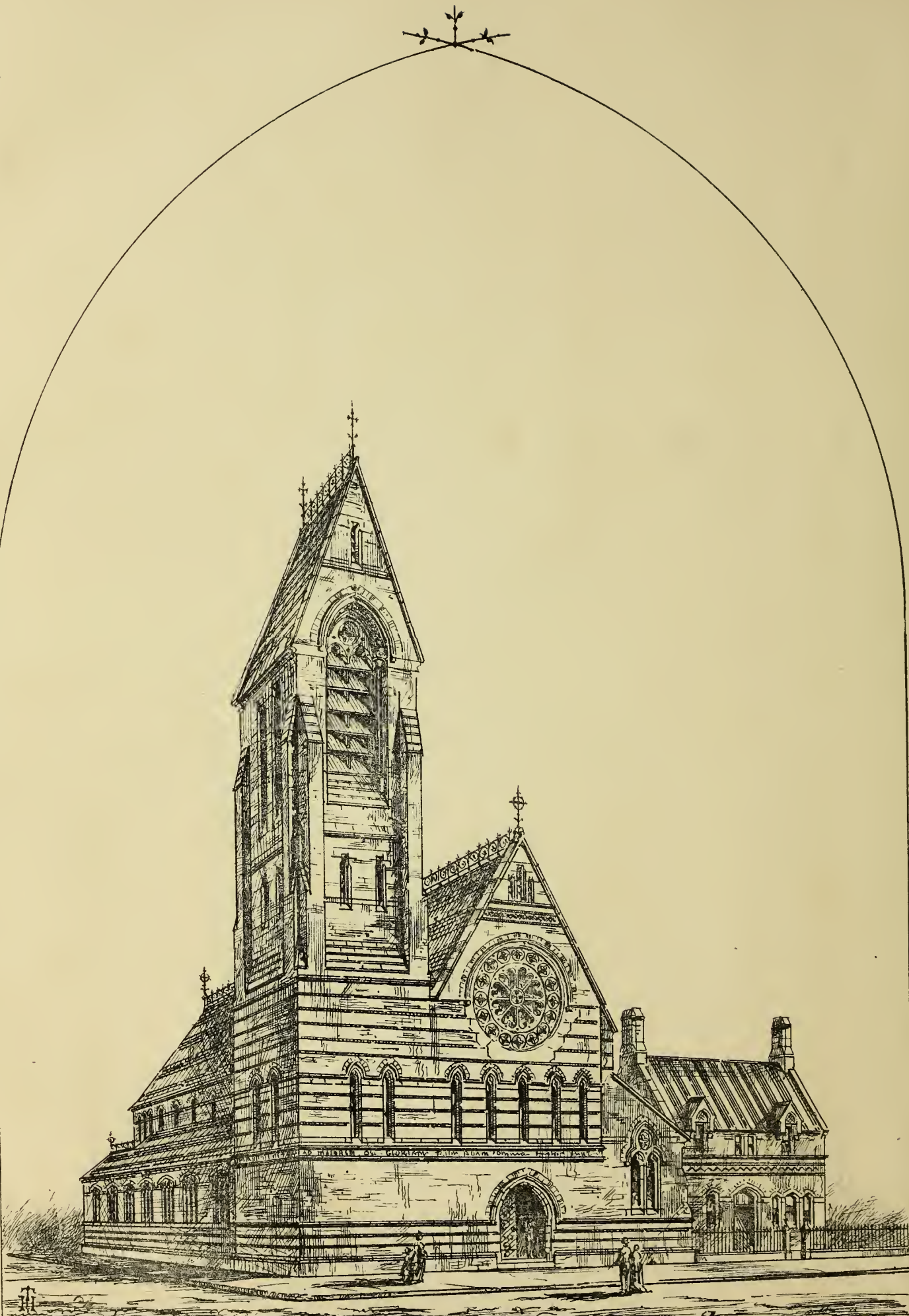
IRISH CIVIL SERVICE BUILDING SOCIETY.

THE above society has completed the second year of its existence, and at its general meeting on Saturday evening, in the Rotundo, the directors laid before the shareholders the following very satisfactory report. We must hold over until next issue the remarks made by the various speakers thereat:—

"At the close of this, the second year of the existence of the Society, it affords us much pleasure to have to report to you that the progress made has been most satisfactory: the Society has not merely held its ground, but has largely increased the number of its members, and the amount of its transactions as compared with the previous year; and this increase has not been attended with any increase in the working expenses, no addition to which will, we anticipate, be made without such an extension of the receipts as will cause it to represent a very small percentage of the profits. During the past year the preparation and discussion of the amended rules occupied, as most of you are aware, very much of the time of the board and of the members at large. The result has been most satisfactory, as we are now acting under a set of simple and intelligible rules, which experience proves to be well adapted to the working of the Society; they have met all cases of difficulty that have arisen, and, no doubt, will meet any that may hereafter arise; and they give to members, and persons proposing to join the Society, a clear and precise view of its operations and the attending costs. There is, however, one slight alteration which the Board would suggest, viz.—the abolition of the fee of 3d. per share, payable by each member in the month of December; we desire to abolish this fee, because the amount realized by it is small, and it is troublesome to collect from all the members. The auditors have devoted an extraordinary amount of time and care to the investigation of the accounts; the form in which they were kept not appearing to them to be judicious, they have recast the whole of the books, and now submit in one sheet the result of the Society's operations for the first two years—ending on the 31st of May last—from which you will perceive that after paying, or crediting, interest at the rate of 5 per cent. per annum on receipts from shareholders, there remains over and above all outgoings a clear profit of £880 9s. 2d., which is equal to a bonus of 5½ per cent. per annum; and we are happy to be able to inform the shareholders that the business done during the portion of the current year which has already elapsed, gives every assurance of at least an equal rate of surplus profit being realized at the date of the next account, which will then, according to the rules, be available for division, or for the formation of a rest-fund, as the shareholders may direct. Since our last report, the board has been reduced by the retirement, from various causes, of several of its members, to the maximum fixed by the rules. The directors who now, according to rule, retire by rotation are G. F. Dunn, Esq., and W. H. Hardinge, Esq.; they are eligible for re-election, and present themselves accordingly."

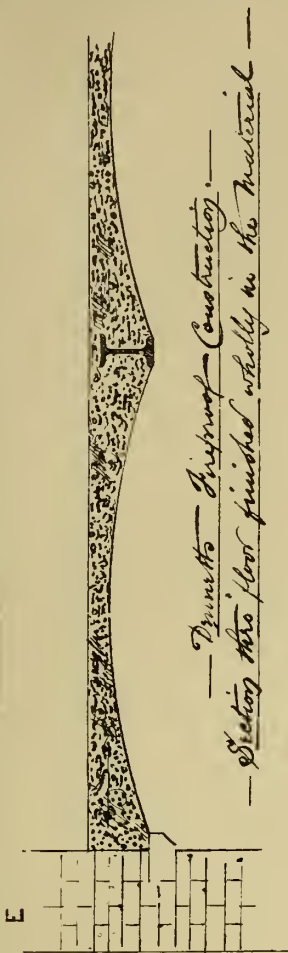
* Read by Mr. T. Ingle, before British Association, at Nottingham.

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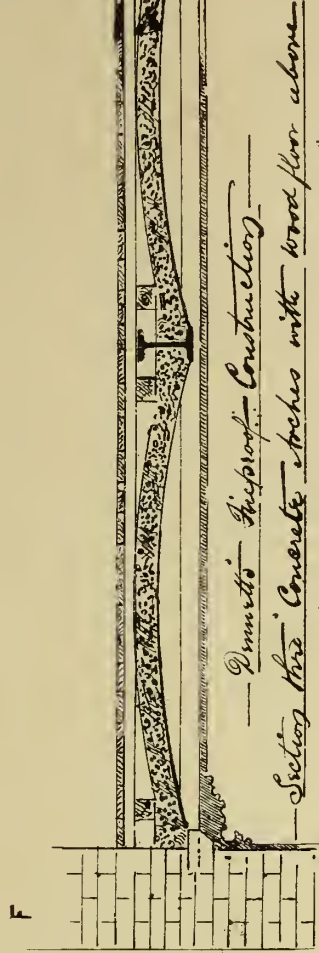
NEW CATHOLIC CHURCH WOLVERHAMPTON * E. Welby Esq. Architect. Des.

E



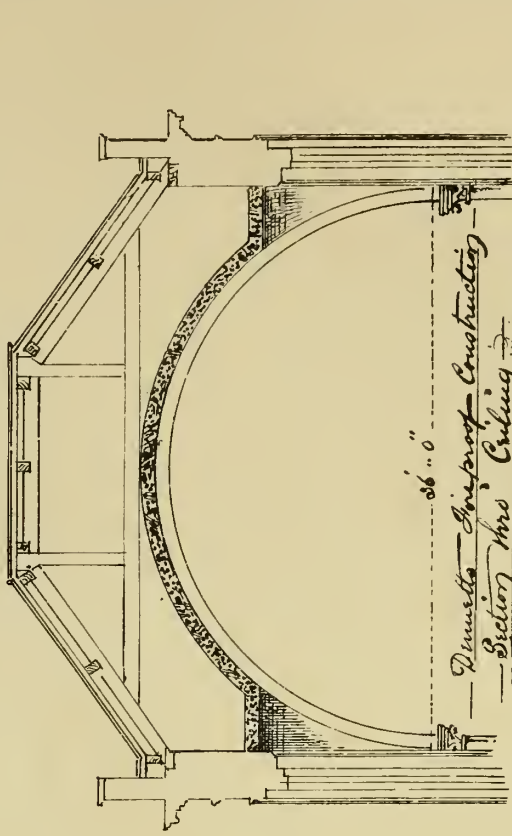
— Diment's Improv'd Construction —
— Section thro' floor finished wholly in the material —

F



— Diment's Improv'd Construction —
— Section thro' Concrete arches with wood floor above —
— 4 horizontal Cornice moldings —
— Scale 2 feet to one Inch —

G



— Diment's Improv'd Construction —
— Section thro' Ceiling —
— over Cabinet Room - New Foreign Office —
— Scale - 8 feet to one Inch —

A



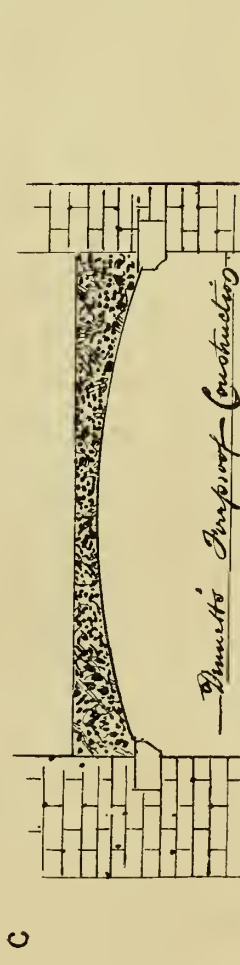
— Diment's Improv'd Construction —
— Scale - 2 feet to one Inch —

B



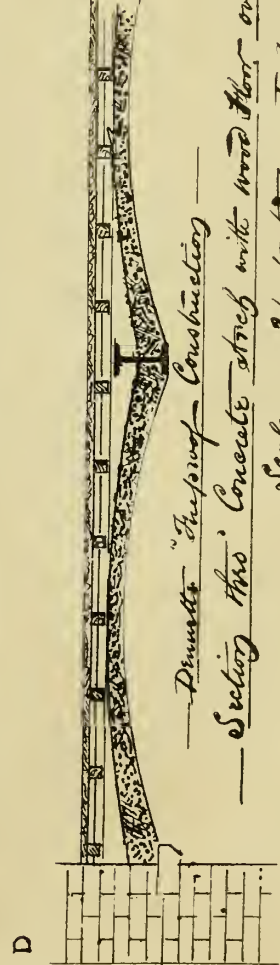
— Diment's Improv'd Construction —
— Section of slated floor —
— Scale 2 feet to one Inch —

C



— Diment's Improv'd Construction —
— Section thro' Corridor of New Theatre, Nottingham —
— Finished wholly in the material —

D



— Diment's Improv'd Construction —
— Section thro' Concrete arch with wood floor over —
— Scale - 2 feet to one Inch —

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DISCOVERY IN THE EAST.

It may interest those who are engaged in the study of the Semitic Palæography of the Holy Land to be informed of the discovery of an early type of Chaldeo-Pehlvi writing on the coins of Artaxias, the Satrap of Armenia, who, about the year 189 B.C. disavowed his allegiance to Antiochus the Great, and established the independence of the kingdom of Armenia, which descended, after an interval, to the subordinate branch of the Parthian Arsacidae.

A modified form of this species of character has long been known to orientalists, as having gradually intruded upon the Greek on the later coins of the Imperial Arsacidae, and as being largely employed in the Bilingual Inscriptions of the early Sassanians in Western Persia—(De Sacy, Ker Porter, *Journ. R. Asiatic Soc.* xii. 253, xiii. 373; Prinsep's 'Essays on Indian Antiquities,' ii. 163).

The legends on the coins of Artaxias have hitherto defied all attempts at satisfactory interpretation through the medium of purely Phœnician palæography (Duc de Laynes' 'Satraps,' *Numismatic Chronicle*, xviii. p. 143), and it is only by a summary change in the value of certain letters, fully authorized, however, by the subsequent alphabets, that the nominal identifications have now been effected.

The legends may be transcribed into modern Hebrew as follows:—בגדי ותרדשיג ארסגך.

I will not detain your readers with any critical examination of the proper version of the name of Artaxias, which varies in its orthography even in the limited Numismatic examples available, and is likewise singularly distorted in the various classical reproductions (Strabo, xi. c. xiv. s. 5-15; Justin, xlii. c. ii.); it may be sufficient to say, that the identification is supported by a large amount of direct and collateral evidence. The opening term, *Bagdi*, "divine," is in complete accord with the Eastern usage of the time; and the concluding title of *Arsgak* may possibly contain the real elements of the titular name of *Arsaces* (Seythian *irs*, "great,"?) which was borne, in his younger days, by Artaxerxes Mnemon,—and traces of which may be found in the designation of *Arses* (the son of Artaxerxes Ochus).

A second royal name that appears on medals of identical fabric, and which reads ותרדשיג ארסגך, may be associated with *Artavasdes*, the son of Artaxias. Later types of money furnish the name of תרדט, *Thiradat*,—an authoritative version of the ancient Armenian Ardoates or Artovart (St. Martin, i. 409); and still more modern specimens of the coinage exhibit the name of תרדט, *Thirdates*, with an obverse most closely imitating those of Tiridates I. (Arsaces II.) of Parthia.

Were I not averse to entering largely into numismatic details, there is much to be gathered from the types and devices of this local currency. Artaxias appears, in the first instance, wearing a Persian turban, which might have served for the exact model of the head-dress of the Parsees of Bombay at the present day; he is next represented in a quasi-Seythian garment, with the bonnet projecting over the front, and the ears and throat closely covered, after the fashion (as has been shown by Mr. Vaux) prevailing in the costume figured on some of the early Daries. His son, Artavasdes, continues the same style of head-dress, while the rulers next in succession adopt a well-shaped helmet surmounted by a Roman eagle. It is to be noted that the coins of this series are altogether deficient in legends. The helmet in the succeeding division of Mint issues is decorated with a crescent, from which the gradation passes to purely Parthian designs. The reverse devices are also highly suggestive,—commencing with an adaptation of the seated figure of Baal-Tars and the Jupiter of the Macedonians, which is here converted into the representation of the king on his throne, crowned as on the obverse, and wearing the long Median robe. This design is almost immediately replaced by the Fire Temple, with the ministering King. This device is subjected to successive modifications, indicative of the progress of the creed and its varying outward emblems, while the earlier inscriptions in the severally associated terms תרדט ארסגך and ארסגך seem to point to an already advanced stage of Zoroastrian teaching. —E. THOMAS, in *Athenæum*.

NATIONAL ASSOCIATION FOR THE PROMOTION OF SOCIAL SCIENCE.

We learn that the order of proceedings at the Congress of the Social Science Association is now published at the office, 2, Essex-street, Manchester. It may be well to remind our readers that all the meetings immediately connected with the business of the association (excepting only the opening meeting on October 3rd, at the Free Trade Hall), will take place in the Assize Courts, which are excel-

lently fitted for the purposes of the association. The two large courts have been allotted to the sections which it is expected will be most numerous attended (Economy and Trade and Education) and the five remaining sections will be accommodated in the smaller courts, the grand jury room, &c., whilst the great hall will form a noble reception room. We extract from the general programme the following details:—On the opening day, October 3rd, there will be at 3.30 p.m. a special service in the Cathedral, sermon by the Rev. Canon Richison, and at 7.30 p.m. the inaugural address will be delivered by the Earl of Shaftesbury, in the Free Trade Hall. On Thursday, October 4th, at 10 a.m., the address of Lord Brougham, President of the Council, will be delivered in the civil court of the Assize Courts; at 11 a.m. the departments will meet in their respective rooms for discussion of their first special questions; and at 8 p.m. there will be a *soirée* in the Assize Courts, when the members of the association will meet for social intercourse. In the course of the evening an address will be given by Dudley Field, Esq., of New York, in the civil court, on the "New York Code;" and in the course of the evening there will be a conversational meeting of masters and matrons of reformatory and industrial schools, in the criminal court. On Friday, October 5th, the proceedings will commence with an address from Hon. George Denman, Q.C., M.P., in the civil court, at 10 a.m., on jurisprudence, and the amendment of law; at 11 a.m., the departments will meet in their respective rooms for the discussion of their second special questions; at 4 p.m., there will be a meeting in the department for Social Economy and Trade (*Dep. B.*) for the promotion of the employment of women; and at 8 p.m., a meeting for working men will be held in the Free Trade Hall, the Earl of Shaftesbury in the chair. Addresses will be delivered by Lord Brougham and others. On Saturday, October 6th, the Rt. Hon. Austin Bruce, M.P., will give his address on education, in the civil court, at 10 a.m.; at 11 a.m., the departments will meet in their respective rooms to discuss papers; in the afternoon there will be an excursion to Sabden bridge, near Whalley, on occasion of the opening of a new co-operative cotton mill, and also a musical promenade in the Botanical Gardens (weather permitting). On Monday, October 8th, at 10 a.m., William Farr, Esq., M.D., F.R.S., President of the Health Department, will give his address in the civil court; at 11 a.m., the departments will meet for the discussion of special questions No. 3; at 8 p.m., a *soirée* will be held in the Assize Courts. On Tuesday, October 9th, at 10 a.m., the address of Sir James Kay Shuttleworth, Bart., President of the Economy and Trade Department, will be given in the civil court; at 11 a.m., the departments will meet in their respective rooms, to discuss papers; and at 7 p.m., a public dinner will take place in the large hall of the assize courts, tickets for which will be issued at the reception rooms. On Wednesday, October 10th, the proceedings of the meeting will be brought to a close by a concluding meeting of members and associates in the civil court at 1 p.m. In the afternoon, it is proposed that an excursion to visit the co-operative establishment in Rochdale shall take place. The reception room is to be opened at the assize courts, on Tuesday, October 2nd, at 10 a.m.; till then tickets for the meeting and the banquet, with all information as to details, may be had from the local secretary, Mr. Duffield, at his office, 2, Essex Chambers, Essex-street, Manchester.

THE PARIS EXHIBITION.

The works of Art intended for the Exhibition of 1867 (limited to such as have been produced since 1855) are to be collected in the Champs Elysées building by or before the 15th instant; the jury of admission will commence its examination on the 10th of November, and announce its decisions by the end of the year. Great dissatisfaction has been caused by the very early dates fixed for this examination, as the works received for exhibition will thus be lost to their owners for twelve months, and it is feared that these regulations will have a damaging effect on the Art portion of the Exhibition; five months seems a long period for selection and arrangement.

As regards foreign countries, much of the anxiety that was felt a short time since has passed away. It is to be feared that the manufacturers of Bohemia, Moravia, and other countries, will not make such a show as they would have done had not the war interfered with their operations, but both Austria and Prussia have supplied the Imperial Commission with the plans of their space and the list of their exhibitors.

As regards Spain, the government has formally announced its intention to take part in the Exhibition, and has supplied its plan and a list of exhibitors, and intends to erect in the park some

structures of considerable extent and importance. The Spanish commission has issued pressing circulars to the local representatives on the subject.

The war in Italy will probably have an unfortunate effect on her manufacturers, but the Italian commission has furnished the design for the façade of its portion of the building, and is about to commence its construction in the park.

Switzerland is expected to be well represented. Its section will be characteristically decorated with a façade in ornamental work, composed of pine wood, and bearing the escutcheons of the twenty-two cantons. She will have, amongst other things, curious archæological and ethnographical collections, and a complete series of the picturesque costumes of the country.

Egypt will present a very remarkable exhibition; a quadrangular building, with a colonnade all round, about 85 feet long by 60 broad, is being raised in the park, and will contain some of the most curious objects of art and antiquity in the country. This building will be a reproduction of the Ptolemaic temple dedicated to Hothor, with the greatest possible exactitude in all the details, and the execution of it has been entrusted to the learned Mariette Bey. Amongst the most interesting monuments and representations to be exhibited are—ceremony of offering to the gods, by Ptolemy; an authentic likeness of the famous Cleopatra, found by Mariette Bey last winter in a cavern at Denderah; bas-reliefs of various handicrafts, classed according to date; artistic representations of the epoch of the pyramids; bas-reliefs of hunting scenes, combats of lions and buffaloes, fetes and dances; bas-reliefs from the tombs of Ti, with scenes of rural life and labour; representation of various trades and arts, the navigation of the Nile, and other subjects, under the various dynasties; reproductions of the famous bas-reliefs and paintings of the Temple of Abydos, with a number of original statues and works of art, coffers and other objects. In addition to this large building, there will be two others illustrative of modern Egyptian life—one representing the habitation of a fellah of Upper Egypt, with a small establishment for artificial hatching, a stable of dromedaries armed and caparisoned for war, and other animals, and an ethnographical collection; the other a horseshoe-shaped kiosk, in the purest Arab style, surrounded with plants and flowers of the country.

Outside of the kiosk native Egyptians will be seen practising the trades of the present day. In the interior of the kiosk will be a divan for the Viceroy of Egypt, who is expected to visit the exhibition, and an oriental café, furnished with all its accessories. In the court will be a large plan, in relief, of the whole of Egypt, executed by order of the Viceroy, and under the direction of Colonel Mircher, the chief of the French mission in Egypt, and in the centre a fountain composed of the alabaster of the country.

THE ROYAL HIBERNIAN ACADEMY.

COPIES of correspondence between the officials of the Royal Hibernian Academy and the Art-Department have been published. These show, in the first case, that the institution is in a bad way, the annual grant of £300 being insufficient, the receipts at the door of the exhibition-room in Dublin not supplying the want. The Council asks, therefore, an additional grant in aid of £250 to pay debts. The Department replies that "My Lords" decline to aid the society to continue its exhibitions by means of a grant from the public funds. Also, it is alleged that the state of the Art-Schools under the Academy is reported to be most unsatisfactory; this applies to all sections of the students, who appear to be without control, improperly directed in their studies, and unproductive of worthy result. On these grounds "My Lords" not only decline the aid sought from them, but "are of opinion that the interests of Art would not suffer if the present grant" were withdrawn from the Academy. To the charges of the Department, the Academy replies, and, on some points, we think, successfully,—on others not so; but, for the most part, in such a manner as to show that the aims and standards of the correspondents are distinct. It is alleged that the Academies of London and Edinburgh receive aid, if not in cash, at least in free quarters, from the Government, whereas that of Dublin obtains only £300 a year; that the expenditure consequent on the annual Exhibition of the latter body is largely enhanced by the practice of paying for the carriage to and from Dublin of pictures by artists who would not contribute to the Exhibition there without that inducement; that the Academy in question holds valuable and suitable premises, which will lapse to the heir-at-law of the testator from whom it received them, if the Exhibition is discontinued, as probably will be the case if the aid asked for is not awarded. Upon this the Department consented to continue the annual grant of £300, but declined to have anything to do with the request for further aid.—*Athenæum*.

MR. BAZALGETTE'S PLAN FOR PURIFYING THE LIFFEY.

We some time since informed our readers that Mr. Bazalgette, who was engaged as consulting engineer to advise the corporation as to the best mode of purifying the Liffey, and of effectually removing the sewage matter which is now discharged into the river, has practically determined on the plan he will recommend, though he has not had time to prepare his report and estimate in detail. The committee have now prepared their report, stating these facts to the council. The problem which Mr. Bazalgette had to deal with was complex and difficult, because of the many interests to be considered, and the peculiarity of the outfall with which he had to deal. The river may be said practically to divide the city into two parts, each of which resembles the other in the leading features of its conformation as it effects drainage. The north side, like the south side, consists of a high district and a low district. The fall from the high districts to the river is considerable, and is rapid, and the facility for leading all the sewage from these districts into the adjoining river was too great and too tempting to be overlooked. We accordingly find that all the drains converge to the river. In some sub-districts a sewer runs parallel to the river, intercepting all the sewers from the upper level streets that run at right angles with the street through which it runs, but that sewer itself finally approaches and discharges its contents into the river. Thus the river, once pellucid and sweet, has become more and more foul and noisome, and as drainage and purification advanced in the districts more removed from the river, the river increased in corruption and rottenness, till it has at length become the great filth receptacle of the city. The low districts on each side of the river also send in their proportions of the abominations; but they, unlike the higher districts, do not so effectively relieve themselves at the expense of the health of the inhabitants of the districts immediately adjoining the river as do the higher streets and squares. At certain states of the tide the water flows back into the sewers, causes the grosser filth to be deposited, and causes the foul air of the sewer to be forced back in proportion as the water rises, and to be injected into the ill-trapped houses, or belched up through the gullies in the streets, to the annoyance of all passers by, and the palpable detriment of the salubrity of the low districts. In considering the question of the purification of the Liffey all these circumstances had to be taken into consideration, and we understand that Mr. Bazalgette entered very fully into them when communicating his views to the committee. Our readers are aware that we have always protested against the proposal to place dams across the stream at several points, so as to maintain a quantity of water at all times in the bed sufficient to cover the bottom and the deposits on it, and also sufficient to dilute the inflowing sewerage. We again and again pointed out the evils that would arise from stopping the mouths of the sewers, forcing the river and tide water back into them, and thus maintaining a constant forcing pressure on the putrid gases of the sewers that must force them back into the lanes and streets, and thus discharge them into crowded streets and dwellings—gases rendered tenfold more poisonous by the absence of dilution, which the closing of the sewers' mouths would necessitate. One of the advices given to the committee by Mr. Bazalgette was not to give any countenance to the damming up project until after they would have effectually purified the river by the operation of intercepting sewers. On another point he was equally positive in his advice. It was this—to effect a radical cure, or not touch the matter at all. On this principle he recommends a complete system of intercepting sewers, and with an outfall so far removed from tidal influence that the sewage cannot be again returned to the river or to our foreshores. Mr. Neville in his report was confined to the city limits for the discharge, and recommended that the discharge be effected at the east wall, near Fort Crystal. It was expected that a Sewage Company, to whom a conditional concession of the sewage had been given, would take the sewage for utilization from that point. Mr. Bazalgette, however, very prudently says the Sewage Company might break down—they might be slow in their operations—they might not get their bill—fifty accidents might arise to render their project a failure, and it never would answer for a great city to have the perfection of its sewerage arrangements contingent upon anything whatsoever. He therefore advises that the outfall be not at the east wall. There was then Sandymount on one side, and Dollymount on the other, to which the outfall might be brought. For many reasons Dollymount was selected. Those reasons are partly engineering and partly sanitary. Some of them have reference to the Ballast Board authority and the navigation of the river—some to levels—some to the sanitary considerations connected with existing populations. The principal cause was, however, the combination of engineering facilities offered on the north side, and the protection against

the possible regurgitation of the sewage if discharged at a suitable point near the North Bull. The outline of Mr. Bazalgette's plan, then, is very simple. He advises the Corporation to assume that there may be no Sewage Utilisation Company—to assume that if there exists such a company it may not be a success, and to construct all its works with a view to the absolute discharge into the sea of all the refuse matter. If a Sewage Company should like to utilise the refuse, well and good. If they gave a proportion of their profits to the city for the use of that refuse, so much the better. But the city must be independent of the operation of any company or body, and be in a position at any hour and at all times, at a tide's notice, to free itself completely from the sewage pollutions, whether there be no company, or be a failure of the company, or be a temporary derangement of the works of the company. No sane man can doubt the wisdom of this policy. It may be more costly to get up the work that will secure this object. But then we will have a complete system—a whole system of purification, and not a half one. We would regret to see a system adopted that would of necessity render inoperative the arrangement arrived at between the proposed Sewage Utilisation Company and the Corporation. We do not believe that the complete purification project by any means involves the abandonment of the idea of turning the sewage to some useful purpose. It may involve some modifications, but in no case ought, and in no case can or will, the citizens consent to have a less perfect scheme when a more perfect one may be realised. The utilisation of the sewage is a good, a desirable thing to see accomplished, but the purification of the river—the perfecting of our sewerage, and the health of the public are the first and chief considerations for the municipal authorities, and to these all minor considerations must give place.—*Freeman.*

PHYSICAL GEOLOGY.*

THE great question which underlies much which agitates us now, and has done for a long time back, is whether the economy of the world as we now see it represents both in kind and degree the economy of the world as it has existed in all time past as far as it can be traced by reference to geological phenomena? When people had thoroughly made up their minds that the world consisted, as far as the outside of it is concerned, of two classes of rocks—igneous rocks and aqueous rocks, it was for a long time the fashion to attribute all the disturbances which the crust of the earth exhibits to the admission or exclusion of igneous masses. The contortions of mountain chains, and the existence of many important faults—in fact disturbances of strata generally—were apt to be referred to direct igneous action. But a closer analysis of the rocks founded on careful survey, not of a little one here and a little one there, but on surveys of kingdoms and countries, has tended to disprove this, what I may now almost call old-fashioned idea; although you constantly see it brought up again and again in popular works, and even in memoirs by authors who ought to be better informed than merely to report the kind of ideas that you find in common-place popular works on geology. Now, if we look at those formations in which igneous rocks are most generally developed, what do we find? Go first to North Wales to the lovely Silurian formation, which is to a great extent composed of igneous rocks, but instead of being great masses that have broken through the crust of the earth and tumbled that crust into confusion, they consist chiefly of beds of great thickness interstratified among the lower Silurian formation, with here and there a pretty mass of porphyry, which may represent, as some think, the rocks of old volcanoes; but the mountainous character of the country is due not to the igneous strata as a cause, because all these strata have been disturbed and thrown into various states by the agencies that produced disturbance; the igneous rocks were not the cause, for they have been disturbed altogether afterwards, and the mountainous character of the country is due to the unequal hardness of the rocks, denudations, some of them sub-aerial, having afterwards given rise to the forms of the surface, the hard rocks refusing to be denuded, the soft ones yielding; the hard rocks therefore make the mountains, the soft ones being found in the valleys. This kind of argument I could also go on to apply to the carboniferous rocks of Scotland, where igneous rocks are rife, and to all those areas where igneous rocks are always found. If we go to the Alps, and look at the strata there, which are disturbed on the greatest scale—at all events the greatest scale on which I have seen it, in an analysis of the structure of the Alps, of that part of it that I know, from east to west for more than 100 miles, I have never seen a fragment of true igneous rock. Gneiss there is, and granite there is, which people have been apt to classify as common igneous production, but no basalts

or common green stones or any of those rocks, although the strata have been disturbed in a manner of which no conception can be formed of those which have only seen those in the British Isles. There are instances of areas as large as half an English county, which have however turned upside down. Professor Ramsay went on to attribute the phenomena to the gradual cooling which the earth had undergone owing to the radiation of heat into space, causing a consequent shrinking which taking place unevenly caused diversities of surface. It had, he proceeded to say, been customary to speak of Cumberland as a great dome, forces exerted from below having borne up the mountains; but Cumberland shows nothing of a dome in the true geographical sense. In that sense, the strata ought to tip from the centre, but instead of that you have strata running in other directions. There is, indeed, nothing cone like in it; the igneous rocks there have partaken of the disturbance and afterwards have been denuded like other strata, thus forming the character of the mountains of the country. My own opinion is this, that both regard to the gneiss or granite, especially the latter, many of the phenomena are simply the results of extreme metamorphism; the rocks have gone through great changes, which I have not now time to enter upon, and the result has been the production of mountains. Now in the disturbed districts, and in several not disturbed, faults are more or less numerous, and they are at all times and of great variety of dimensions. You find that in the British Isles from the middle tertiary stratas downwards from that time some extend to thousands of feet, others as small as only a few inches; but as a general rule, we shall find the greatest faults accompanying strata will have been most disturbed; and that the strata that have been most disturbed are, as a rule, the oldest, the disturbances in this case having been most frequent. The professor gave several instances of these faults in our own island and in the Alps (in the latter case the scale being very large), adding that traces of the action producing this came down nearly to our own day. Now, he said the question arises whether the agencies have been sudden in their operations, or if the changes have been progressive and gradual. It is a very puzzling question to geologists, and various opinions have been stated. One opinion is that we now live in a world, as nearly as can be in a finished state, which has to suffer no more catastrophes; another that we are now remaining in a temporary state after a succession of spasms, but that they may recur again at some period a long way before us; or again, that the state of tranquillity we now enjoy has been the seeming order in all time, as far as geologists can trace back the action of all the processes which have brought us to the present condition of the world. These are the true leading opinions, and my own opinion inclines to the last. Though many geologists of great repute are still attracted to what I may call the spasmodic, or what a friend of mine irreverently calls the Jack-in-Box theory, you lift the finger off the top of the box, and the change instantly springs forth. Proceeding now a point further, the connection of life with the modifications which have taken place in the crust of the earth leads us to come to something like a definite opinion on the subject, which may have some possible value. There have been a great number of species, as everyone knows, inhabiting the world at various times, the remains of which are shown in the different formations taken on a large scale, there has been a clear succession of life, each formation being marked by its own particular faunas. This fact led to the doctrine being held that there had been sudden great creations, by which the world was peopled at once, and that those existences, after long intervals, were destroyed by sudden agencies, and then, that afterwards, a new creation came in, and that each formation was in this way marked by its peculiar forms of life. When, however, it was found that in some formations they ran into each other, some species passing air, this theory of complete sudden extinction was seen to be untenable, and by-and-by, when the structure of the rocks was better analysed, it was found that the various strata had some of them suffered disturbances, and new forms were placed upon them unconformably, and it was shown that in the strata which lay unconformably, there was about to be a great break in the line of life than in instances where two formations were found lying in order one after another. It has been a question with some geologists whether two distinct marine faunas could not have been contemporaneous in some of the past eras. It is very possible that this may have been the case, but in my opinion this is only a minor point of view. When we take the great formations, such an opinion is put aside. I could never expect to find that some of those mixed fossils had been actually contemporaneous. However we may look upon this question, this is certain that the great principle remains of a succession of life, which shows a method of progress, the old disappearing, and the new coming in, and that these breaks, as I have shown in detail elsewhere, have a close connection with unconform-

* Address by Professor Ramsay at Meeting of British Association.

ability of strata. After following out this view with particulars, the professor continued:—This reasoning assures us that there never has been universally over the world any complete destruction of life, but that the succession of existences has gone on in regular order and sequence; that we have lost a great number of the records,—whole chapters, whole books, by the immense disturbances of the earth's crust in the late periods of time. We must remember, looking at this duration, that we have still a large percentage of the marine life which has managed to live on to the present day, this must show that there has not been any universal catastrophe which destroyed the life of the world; there cannot possibly have been so, because so many of the forms are still alive. Add to this that we see many species where it is hard to determine whether they precede others or not, and that the disturbances and faults have come down almost to our day, and may, in fact, be occurring now. Putting all these things together, we are pointed to the conclusion that all these changes have been so slow and gradual that to the occupants of the old time, if they had reason to observe, everything would seem to go on in the same slow, steady, and apparently undisturbed manner in which they appear to us to go on now; and if this be true, then, instead of having recourse to unusual catastrophic action to explain what is seen to have resulted, it all resolves itself into the process of time,—the effect produced in long spaces of time by small causes which were accumulative, and so were more than equal to all the unusual destructive forces which were attributed to the igneous rocks, which latter, with all other rocks, yielded to those causes which have brought about the astonishing changes which the world has so visibly undergone, resulting in the present physical geology and geography of the earth's surface.

ART UNION OF DUBLIN.

A MEETING of the committee of the Art Union of Dublin was held last week, in the board-room of the Royal Dublin Society.

The chairman, Joseph Robinson, Esq., stated that several meetings had lately been held, with the view of considering the feasibility of continuing the Art Union, and having a distribution of prizes this season. Last year the amount of subscriptions at one shilling was only £366, but the experimental drawing held at the beginning of the present year at a five shilling subscription had resulted in the receipt of £656, and although this was far short of the amount of prizes given, and had caused a loss to their secretary, Mr. Hayes, still, as it was a great improvement upon the former drawing, they had determined to persevere, and he believed that the tickets and prospectuses were now ready for issue.

Mr. M. A. Hayes (secretary) said that the tickets were ready. The time for the drawing and distribution of prizes had been fixed for the 8th October, a very short period for their operations to be conducted in; but the exhibition of the Royal Hibernian Academy was now several days open, and if they protracted the drawing till a later period there would not be time for prizetakers to make selections from that exhibition before its probable close; besides, he always found that persons put off subscribing till the period of the drawing was close at hand, so that not much was gained by having a longer time. The exhibition of the Royal Hibernian Academy has opened this year at an unusually late period, but it contained a considerable number of very meritorious works and cabinet pictures. The total number of pictures exhibited was 543.

Mr. Kirk feared it was a bad time of the year to hold their drawing, so many persons being out of town, and the public in a great measure tired out with lotteries of all kinds; still, he considered that an effort might be made to support an Art Union in Dublin. Such associations were most useful in art, and were generally successful in most other large towns; but in Ireland, hitherto, all the societies of the kind which had been from time to time started had languished and become extinct.

A letter from Walling Everard, Esq., private secretary to the Marquis of Abercorn, was read, announcing that his excellency would patronize the Art Union.

The draft of a circular was agreed to, from which we take the following extracts:—The limited encouragement for art which exists in Ireland, compared with other countries, renders it of most essential importance to sustain an Art Union, not only to disseminate a more general taste for the fine arts in the public mind, but also to prevent the utter decadence of their practice in Ireland, and sustain the exhibitions of the Royal Hibernian Academy, as artists cannot be expected to devote time and labour to the production of works of imagination and taste, if unremunerated and unappreciated. The committee have adopted five shillings as the subscription, a guinea seeming to be too high, especially when no print is given, and a shilling being found

too low for any practical advantage to art. The drawing of prizes has been fixed for Monday, the 8th October, and selections will be made by the prizetakers from the exhibition of the Royal Hibernian Academy, now open in Dublin. A record of the names and addresses of all subscribers is kept, and prizetakers will be communicated with immediately after the drawing on the 8th October. All parties forwarding a stamped and directed envelope will receive a list of the prizes drawn, with the numbers and addresses. On forwarding stamps and a stamped and directed envelope, a ticket will be sent by the secretary."

THE WELLINGTON BRIDGE.

It is now just fifty years since the Wellington (or as it is popularly known, the "Metal") Bridge was erected, at a cost of £3,000. The money was advanced by a private party, on the security of the tolls until the amount was repaid, which, we are given to understand, has been realized many years since. Notwithstanding this, a demand for £2,000 is made by the present holders before they resign their claim to the tolls, contrary to the terms made originally. It has been suggested to us that, for the purpose of compelling these parties to forego their demand, the Corporation and Ballast Board should erect a temporary wooden structure, contiguous to the "Metal" one, and have it free to the public. A great relief would be thus given to Carlisle Bridge, the foot-passengers between the Commercial Buildings and the north side would have a shorter journey, and avoid a vexatious toll. As we write, our attention is called to a communication on this subject in a morning journal, in which the writer suggests an iron bridge from Anglesea-street to Bachelors'-walk. This, we conceive, would be coming rather near to Carlisle Bridge to be of any great advantage. He says:—

"I take the liberty of bringing under your notice the subject of the want of bridge accommodation across the Liffey, which is very sorely felt, and I would suggest that it can be greatly alleviated by opening the 'Metal' bridge free to the public, the toll on which is at present a disgrace to our city. We have a Corporation; why do they not take into consideration the comfort and convenience of the vast majority of the merchants of Dublin, instead of making themselves a debating and political society? At present the merchants of the Commercial Buildings and vicinity are obliged to walk around by either of those very crowded and dangerous thoroughfares—Carlisle or Essex bridges—as also the merchants of the north side coming to the banks and Chamber of Commerce. The Dublin Corporation can spend the moneys of the overtaxed ratepayers in such a scheme as the Vartrey waterworks, and yet deprive them of even a sufficient supply of very bad water. Why can they not apply sufficient funds to the purchase of the Metal bridge? If the present holders refuse to sell, why not build across from Anglesea-street, which would greatly relieve the commercial community, and save a great portion of the expenditure that would be incurred by the re-building of Carlisle bridge. A light iron structure, similar to Victoria bridge, would not cost as much as the re-building of Carlisle bridge, and would be both an ornament and inestimable benefit to our city."

We trust that public attention will be called to the importance and justice of giving facility to passengers between the portions of our metropolis we have referred to.

THE ATLANTIC TELEGRAPH.

SOME of our readers will probably be a little surprised when we remind them that no less than four attempts were made, before that of the present year, to pierce the Atlantic with electricity. In this busy age events succeed each other with such rapidity, that the records even of great facts are rubbed out, as it were, from memory's tablets by the constant attrition of new phenomena. For ourselves, we confess our obligation to Dr. Field for brushing up our recollection of the earliest expeditions made with the object of establishing a telegraphic communication between Europe and America. The first was made in 1857, by the Agamemnon and Niagara, and the cable was paid out successfully to the extent of 335 miles. But consternation was occasioned on the instant, by the discovery that the electrical continuity was lost. To the inexpressible delight, however, of everybody on board, the electricity suddenly returned, just as the scientific authorities were going to give the order to cut the cable and wind in. Before morning their joy was turned to sadness, for the brakes were applied to stop the cable from running out too fast, and as the stern of the ship rose from the trough of the sea

the strain was too sudden, and the cable parted for ever.

The next attempt, early in 1858, was made under the immediate direction of Mr. Cyrus W. Field, who, after having been from the commencement the most lavish promoter of the scheme, had now accepted the post of general manager, generously refusing a proffered salary, and preferring to discharge gratuitously the onerous duties of his office. Mr. Everett had now designed a paying-out machine on a new principle, and Mr. Appold had invented "self-releasing brakes," so constructed as to give way when the strain exceeded a ton and a half. As the cable was calculated to support a strain of something over three tons, the recurrence of the accident of the previous year was thus rendered impossible. On this occasion the laying of the cable was commenced in mid-ocean, the Niagara and Agamemnon proceeding in opposite directions after splicing their respective portions. Twice the cable broke when the ships had not long separated, and twice the gallant ships met again and renewed the splice. The third time the ships receded from one another as far as 200 miles, when the electric current again ceased to flow. This time the cable was found broken within 20 feet of the Agamemnon! No one could then guess the cause of the disaster; and by experiments which were made before cutting off the now useless remnant from the Niagara, it appeared that the cable, or what remained of it, was capable of supporting a strain of four tons for an hour and forty minutes.

Notwithstanding this failure, Mr. Field and his friends persevered; and as they had luckily still got enough cable for the entire length, they determined to make another attempt in the same year. This, the third expedition, gave rise to the greatest triumph, and subsequently to the deepest despondency, that had yet been known in the annals of the Atlantic Telegraph. The Agamemnon and Niagara, after remaining in Europe just long enough to take in coal and provisions, sailed at once to their rendezvous in mid-ocean, and commenced operations on the 29th of July. On the 5th of August Mr. Cyrus W. Field, from the Niagara, Trinity Bay, Newfoundland, telegraphed to the Associated Press, New York, that the Atlantic Telegraph was completed. No words can express the enthusiasm with which Mr. Field was received as he steamed in triumph into New York. He was the man who, by his energy and wealth, had first practically started the expeditions, and by his skill and perseverance had now carried them to a successful issue. He was in every sense the hero of the occasion, and the New Yorkers were justly proud of their countryman. Alas! on the very day which they had set apart to do him special honour, the speaking, living existence of the cable was at an end, and it lay along the bed of the Atlantic an inanimate and useless mass!

From that time to 1865, a period of seven years, no fresh attempt was made. There needs no stronger proof of the intense disappointment occasioned by the barren success, ten times worse than failure, of the second expedition of 1858. There were not wanting pseudo-wise men, who had always vaguely scoffed at the idea of any Atlantic Telegraph, and who now, emboldened by seeing the realization of their sinister predictions, mustered up courage to explain gravely why such a scheme could never answer. Some declared that the telegraph plateau—that wonderful submarine highway which runs straight from Ireland to Newfoundland between jagged rocks and stupendous mountains—was a myth and a phantom of the imagination. Yet this plain had been carefully sounded both by American and English mariners, and the chart of its conformation rested on the authority of men who were in no way concerned in the speculation. Other critics, more flippant and still less learned, called the scheme "a moon-hoax," and wrote sarcastic articles under such titles as "Very like a whale," and "Was the Atlantic Cable a bung?" In the mean time the gallant band held their own, and found some consolation in recollecting that the defunct cable was in many respects imperfectly constructed, and that it had been wound and unwound a great many times, carelessly exposed to vicissitudes of weather, and badly shaken in the heavy gales of 1858. It must be admitted that these revelations, if they comforted the advocates of the scheme, were a little awkward to confess to the public, who would naturally ask, why so momentous a struggle had been undertaken with imperfect weapons? Perhaps the answer might have been, that as there was a sufficient quantity of cable standing over from 1857, the persons in authority did not venture to recommend the company to order any more without first trying what they could do with the old stock.

The expeditions of 1865 and 1866 are fresh in the memory of all, and both have been graphically described in the various daily journals published in London. Dr. Field gives his own heart-stirring account of all the expeditions, availing himself, however, occasionally, of a sparkling passage from the pen of Mr. Woods or Dr. Russell. Perhaps, however,

* From review in *Athenaeum* of Dr. H. M. Field's "History of the Atlantic Telegraph." (London: Low and Co.)

the most instructive part of the book is that which can be found in no newspaper—the personal narrative, which the author can only have derived, as a whole, from the actual promoters of the scheme. It was while turning round a globe, and meditating on Mr. Gisborne's proposition for a telegraph from Newfoundland to New York, that a young merchant, who had retired from business with an ample fortune, was led to ask himself the question, Why should there not be a wire across the Atlantic Ocean itself? The subject had occupied other people's minds; and Lieut. Berryman, sent out by the Navy Department to study winds and currents, had already reported the existence of the deep sea plateau. Accordingly when Mr. Field wrote to the National Observatory at Washington to ask for scientific advice as to the feasibility of the telegraph scheme, Lieut. Maury answered,—“ Singularly enough, just as I received your letter I was closing one to the Secretary of the Navy on the same subject.” He enclosed a copy of this official letter, and it contained the following remarkable words:—“ Whether it would be better to lead the wires from Newfoundland or Labrador is not now the question; nor do I pretend to consider the question as to the possibility of finding a time calm enough, the sea smooth enough, a wire long enough, a ship big enough, to lay a coil of wire sixteen hundred miles in length. . . . A wire laid across from either of the above-named places on this side will pass to the north of the Grand Banks, and rest on that beautiful plateau to which I have alluded, and where the waters of the sea appear to be as quiet and as completely at rest as it is at the bottom of a mill-pond.” Strange that this “ beautiful plateau” should occur at the narrowest part of the ocean, and between countries which are both occupied by energetic Anglo-Saxons! Here, then, was sufficient encouragement: other men, to whom science was a regular pursuit, had prepared the course, Cyrus Field was the man to run the race. He at once set to work with extraordinary energy, and, with his own example to back his arguments, succeeded in inducing four other men of large fortune to enlist themselves in the enterprise. With some little trouble a very liberal charter was obtained from the Government of Newfoundland, and at six o'clock, one Monday morning, at the house of Mr. Cyrus Field's brother, a company was organized with five directors, the charter was formally accepted, and a capital of a million and a-half of dollars was subscribed.

Such was the small beginning of this gigantic enterprise; small, we mean, in numerical force, but great in courage and activity, and powerful in its pecuniary resources. There was a noble self-devotion in the determination of Mr. Field and his four friends, men of secure position, who might have lived without anxiety for the rest of their lives, to throw themselves and their treasures once more into the *mêlée* for the sake of achieving a result which would benefit the world in general, more than themselves individually. If they met with a good deal of discouragement in some quarters, they were occasionally buoyed up by the most generous faith in others. We are rather proud to say that, while the scheme originated in the United States, England has not been backward in the efforts which have brought it to a successful conclusion. While the American Senate passed the bill brought forward by a majority of one, the English Government, without thinking it necessary to go to Parliament, guaranteed, as early as 1856, work to the amount of £14,000 per annum (or £4 per cent. on the assumed capital) for a certain period, and £10,000 per annum for 25 years afterwards. Before that, Newfoundland, an English colony of no very great wealth, had guaranteed the interest of 50,000 bonds, made a grant of fifty square miles of land, and promised £5,000 towards the construction of a road through the barren plains and wild forests of the interior. Before commencing operations, it was necessary to have recourse to England for additional capital, or a new company. The latter course was chosen, and there was an Atlantic Telegraph Company on either side of the ocean. It would appear, then, that the two great branches of the Anglo-Saxon race, the old and the new have each had an important share in bringing about the great result. To gauge their respective services, and say which has done most, would be difficult, if not impossible. Let us hope, then, that there will never be any national jealousy on this subject, and that Briton and American will be content for ever to share the fame, as cordially as on board the Great Eastern they shared the labour, the anxiety, and the final triumph—a triumph which, we trust, will be enduring, and not again “ interrupted.”

A DEAR PRIVILEGE.

A MEETING of Committee No. 1 of the Municipal Council was held on Saturday, when a letter was read from Messrs. Stewart and Kincaid, applying for permission to connect the sewerage of new streets now in course of formation within the municipal boundary

on the North Circular Road, with the city sewer in Aughrim-street, and also with reference to the drainage of houses on the North Circular Road, outside the municipal boundary, built on the property of the late Lord Palmerston, into the same sewer, upon which the Committee passed the following resolution:—“ That we recommend the Council to permit the connection of the sewerage of the new streets, within the municipal boundary, as asked for, under the supervision of the city engineer; and that Messrs. Stewart and Kincaid be allowed to connect the drainage of the district outside the municipal boundary with the city sewerage, on payment of £500 now, and subject to a payment of £1 per annum for each house built hereafter.”

TRADE STRIKES.

The joiners' strike at Carlisle, which has for many weeks caused a stagnation in that department of the building trade of this city, is now at an end, masters and men having come to terms. The men get their wages advanced to 27s. a-week.

Preston, the centre of one of the most obstinate strikes on record, is now the scene of another conflict between employers and employed. The contest on this occasion is between the master builders and the joiners and carpenters. The latter are attempting to enforce all kinds of stringent and intolerable conditions as to the hours and mode of work, the number of apprentices, &c. The dispute has already lasted eighteen weeks, and seems likely to continue.

The effects of the ironworkers' strike on the Tyne is being very severely felt by the families of most of the men, who are very ill-off, and some of them have been reduced to the degradation of begging for support, as the pittance they are getting from the Trades' Union is very inadequate to their maintenance.

After a strike, extending over six weeks, the dispute between the journeymen carpenters and their employers at Manchester has ended in a compromise. The loss to the men in wages by the strike is estimated at from £12,000 to £16,000.

TENDERS REQUIRED.

By W. J. Kane and Son, North Wall, Dublin, for seating two large boilers and building large main flue.

By Messrs. J. J. Byrne and Sons, Henry-street, for building two entrance lodges, wing walls, &c., to Marlay Demesue, Co. Dublin, for E. H. Wadge, Esq.

By Mr. Bedborough, architect, Southampton, for erecting a mansion-house on Marlay Demesue, for E. Harvey Wadge, Esq.

By the Board of Public Works for building a residence at Howth for the chief officer of Coast Guards.

For alterations in Naas jail.

For erecting and completing cells in Mountjoy Female Convict Prison, to the 8th inst.

For supplying and erecting a public clock for Naas, Co. Kildare, to 3rd inst.

By the Belfast Town Council, for designs, plans, specifications, and estimates for carrying out their new cemetery.

By Mr. John Sterling Butler, for the new R.C. church at Allen, Co. Kildare, to the 12th inst.

By Bray Town Commissioners, for works at mouth of Bray river, to

By Ecclesiastical Commissioners, for enlarging the church of Ballymoney. To 20th inst.

THE LATE CHARLES HALLIDAY, J.P.—In the death of Mr. Halliday, Ireland has lost one of her most distinguished antiquarians and archaeologists. Although engaged in the pursuits of commerce—in which he had amassed a large fortune—Mr. Halliday found leisure to apply himself to the elucidation of many obscure branches of Irish history and archaeology. His powers of research were really wonderful. In the Royal Irish Academy, when a knotty point of historical importance was started, Mr. Halliday was most frequently made referee; and his contributions to “the Transactions” of the academy contain many valuable papers. Mr. Halliday had accumulated a large and very select library, and one of the choicest collections of pamphlets to (numbering over 6,000) be found in Ireland. He filled the office of Governor of the Bank of Ireland on several occasions, was vice-president of the Chamber of Commerce, and one of the members of the Ballast Board; in addition to which he devoted no inconsiderable portion of his time to the working of charitable institutions. Mr. Halliday's death was rather unexpected, for, although upwards of eighty years of age, he attended a council meeting of the Chamber of Commerce on Thursday.

IRISH BUILDING NEWS.

GENERAL.

Plans are in preparation for extensive alterations to the premises Nos. 2, 3, and 4, Mary's-abbey, for Geo. J. Alexander, Esq. The new front will be of limestone to the level of ground floor window sills, and the superstructure of red facing stocks, having pilasters forming uniform bays at each side of central gateway, with louvred warehouse windows, and ornamental arches over same, with brick cornice and coping. The front building will be three storeys in height, and the back one two storeys. The portion facing the street will have a frontage of 49 feet, by 23 feet in depth. Mr. Charles Geoghegan, architect.

The Naas Town Commissioners are about to erect a clock on their hall. They propose to place it on the right wing of the hall, with dial to match the clock, and directing vane on the left wing.

The Mountjoy Female Convict Prison is to be extended by the building of new penal cells.

The staff-sergeants' and soldiers' quarters, huts, &c., at the Charles Fort Barracks, Co. Cork, are to be warmed and ventilated before the setting in of winter.

The Bray Town Commissioners have accepted the tender of Mr. Patrick Byrne, for repairing sewerage in Little Bray; and of Mr. Michael Byrne, for constructing new sewerage on Bray Commons.

The Belfast Town Council invite landscape gardeners and others to send in designs for the carrying out of their proposed cemetery, which will contain 45 acres. Should a design of sufficient merit be sent in the author will be retained to carry it out in the usual way.

Tenders are about being received by the Industrial Tenements Company, limited, for the erection of ten blocks of dwellings, 4 storeys in height, containing about 120 rooms, with convenient water supply, —cinder shaft and foul water sink on each staircase landing—with due regard to light and ventilation; extensive airing grounds, laundry, and latrines being provided in the rear of the premises. The site purchased for the new model dwellings is situated in Meath-street, having 38 feet frontage, and extending 174 feet on the south side of Earl-street, and has been happily selected for the purpose, the demand for improved houses for the labouring classes being very great in this locality. The buildings will be carried out under the direction of Mr. Charles Geoghegan, architect to the company.

The trustees of the Burke Asylum, Carrick-on-Suir, have employed Mr. Piers Kelly, of Waterford, as their architect for the erection of the asylum.

The foundation-stone of a new asylum for the Female Blind was laid on the 18th ult., in the grounds known as Castle Merriem, Co. Dublin, by Cardinal Cullen. The site was recently purchased by the Sisters of Charity, in order to enable them to extend the accommodation for applicants. The new building, designed by Mr. Charles Geoghegan, will be in the Italian style, and will harmonise with the existing structure, to which it will be connected by spacious corridors. Ample dormitories, lavatories, on the most approved principle, school-rooms of large extent are projected, and there will be accommodation for at least 250 inmates. The arrangements for ventilation are excellent. The grounds will be tastefully laid out.

It has been resolved to erect an illuminated turret clock at the Market-house, Armagh.

An extensive range of stores has been recently erected for the accommodation of the flax-buyers attending the market at Magherafelt, Co. Derry, by the Worshipful Company of Salters, London. These stores have been built on a superior principle, with a special view to protection from fire.

It is proposed to alter and improve the building in Belfast known as the White Linen Hall, Donegall-square. One of these schemes would invest private parties with the ownership and control of the hall and the enclosed ground surrounding it, while the object of the other is to give it a permanent semi-public character.

The recently-erected Protestant Hall, near Belfast, at Whiteabbey, was opened on the 18th ult.

Extensive additions to the Queen's College, Belfast, are in progress.

Alterations are to be made in certain apartments at the Tallamore Union Workhouse, to render them suitable as residences for the Sisters of Mercy, who have been recently appointed as nurses in the infirmary and infirm wards.

The church of Ballymoney, Co. Antrim, is to be enlarged according to plans by the architects to the Ecclesiastical Commissioners.

ROMAN CATHOLIC CHURCH.

A new Roman Catholic Church is to be built at Brosna, Co. Kerry, for the Rev. P. Moriarty, from plans, &c., prepared by Pugin and Ashlin. The church is of a simple character, and consists of nave, transepts, chancel, sacristy, and tower, which serves as a porch. The nave is 28 feet wide, and the entire length of church is 100 feet; the transepts are 22 feet wide, and are separated from nave by two arches, having limestone columns, &c. The chancel is semi-octagonal, each side pierced with three lancet windows. The tower stands at the north-west angle of the church. The nave is lighted with two-light windows. There is a sort of interior buttressing in the church, the buttresses coming between each window, arches being thrown across from one to the other—thus forming an arcade.

A new church is in contemplation for Glashule, Co. Dublin, and we understand that preliminary drawings have been made by Pugin and Ashlin, of Stephen's-green, and Ely-place, Dublin.

The building of the new Roman Catholic church of Saul, near Downpatrick, was carried out by Mr. M'Mullan, of Newtownards, from plans by the Rev. J. R. McAuley, Belfast.

The new Roman Catholic church of St. Peter, Falls-road, Belfast, will be dedicated on Sunday, the 14th inst., by the Most Rev. Dr. Dorrian.

DISSENTING.

The foundation-stone of a Wesleyan school-house was laid on the 26th ult., at Sandymount, by Mr. H. Webster. It will adjoin the chapel, and be in the same style (Gothic), 60 ft. by 30 ft. in the clear. The walls, 18 ft. high, will be of rubble granite, with chiselled groins and white stock brick dressings to doors and windows. The cost will be about £500. Messrs. Beckett, St. Stephen's-green, are the builders.

The building committee of the new Presbyterian Church at Whitehouse, near Belfast, have accepted the plans of Messrs. Bell and Marsh, Belfast. The works will be commenced immediately.

New school buildings are to be erected at the rear of Elmwood Presbyterian Church, Belfast. The designs were supplied by Mr. John Corry, an amateur!

MISCELLANEOUS.

A very remarkable stone implement, formerly in use as a hammer, or possibly a war-club, by the ancient inhabitants of this country, was recently raised from a trench in a field in Ballynamaddy. It is 6 inches in length, $4\frac{1}{2}$ inches in breadth across the centre, and $3\frac{1}{2}$ inches thick. It is shaped like a wedge—rounded at one end and tapering to an edge at the other; and has a hole two inches in diameter, evidently intended for a handle, bored quite through the centre of the block. It weighs $6\frac{1}{2}$ lbs.

Viscount Powerscourt has recently presented to the National Gallery of Ireland a painting of much interest, being a copy by Domenichino of Raphael's "St. Cecilia," now in the Pinacothek at Bologna. Such a copy, besides being in itself a fine work of art and being in excellent preservation, has an additional interest as a transcript from a great work in its prime, and conveys, perhaps, more truly than the existing original does now, the work as it emanated from the hands of the master himself.

There is in course of construction, as an experiment and possible model, in the Quartier de Roule, Paris, a house having nine storeys above the ground floor, and, with basement and cellars altogether, eleven storeys. As land in the centre of Paris is of great value, and consequently rents very high, the object of the building in question is to obtain increased space by means of increased elevation. This house will have this peculiarity—that it will have no staircase, but it will be provided with an hydraulic apparatus similar to that in use by builders to raise their materials to upper scaffolds. This apparatus consists of two large flat forms, ascending and descending every minute without making any noise. Upon these platforms will be placed seats, so that the lodgers in the house will be enabled to reach the highest storeys without any fatigue. From this arrangement it would follow that the upper storeys being most airy, commanding the best views, and being free from all risk of inconvenience from lodgers above, will probably obtain a higher rent than the other apartments. Thus an entire revolution in house arrangements will be effected.

The quantity of railway iron exported in the first seven months of this year reached 314,732 tons, as compared with 224,102 tons in the corresponding period of 1865, and 256,536 tons in the first seven months of 1864. A very large share of the increase observable in this year's figures is attributable to the United States, which took no less than 60,979 tons, as compared with 23,825 tons in the corresponding

period of 1865. The re-establishment of peace in the States, and the consequent extension of railways, has been the cause of this revived demand for railway iron. There has also been a large expansion this year in the quantity of railway iron sent to British India, the shipments in the seven months reaching 73,381 tons, against 60,638 tons to the corresponding date of 1865, and 31,626 tons in the corresponding period of 1864. The Indian railway companies, as here shown, continue to be excellent customers, notwithstanding the advanced stage of development attained by the great Indian networks. Russia took 38,261 tons to July of this year, while in the corresponding period of 1865 the exports to the same quarter were 20,153 tons, and in the first seven months of 1864, 13,490 tons. The value of the railway iron exported to the 31st July was £2,539,483, as compared with £1,828,175 to the same date in 1865, and £2,080,819 in the corresponding period of 1864.

We understand that the coins recently dug up at the Ferry Gate, Derry, are those commonly called "Patrick Pence," coined by the insurgents in 1642. On the reverse they bear the device of David, in a kneeling attitude, playing the harp, and looking up towards an imperial crown. The latter, with the motto "Floreat Rex," is an allusion to Charles I., under whose pretended commission they professed to act. On the obverse appears St. Patrick in his episcopal robes, with a mitre, and having his cross under his left arm, in the act of expelling the reptiles. In the background there is a church, and the legend is "Quiescat Plebs."

The Smith O'Brien Monument Committee have, on the recommendation of Mr. Thomas Farrell, R.H.A. (who has completed the model), decided that the statue shall be in marble. Those who have been favored with a view of the model in Mr. Farrell's studio, express their conviction that the statue, when completed, will reflect great credit on the artist. The sculptors called on to compete were, Mr. Lawler and Mr. Farrell.

The drawing for prizes in the Art Union of Dublin takes place on the 8th inst. The subscription is now fixed at 5s. The selection of prizes is to be from the Royal Hibernian Academy's present exhibition.

The parish church of Balteagh, Co. Derry, has been provided with a very fine-toned bell, the gift of Mrs. Chichester, wife of the rector.

The *Daily News*, in describing the Liverpool News-room, says: "The room itself, though incomplete, already presents ample evidence of its future splendour. The walls are chiefly of Caen stone; the beautiful cornice is supported by handsome marble columns and pilasters, the shafts being of Cork marble (red), with Sicilian (white) bases, and Baddilla (blue) pedestals."

The Dunlalk Steam-packet Company have declared a dividend of 6s. per share. The earnings for the past half-year are £2,000 more than for the previous one.

A number of commercial gentlemen have presented Mr. Jury, of College-green, with a well-executed full-length portrait of himself, painted by Mr. Clarke.

A large staff of engineers, under the personal superintendence of Mr. M. A. Purcell, C.E., and Mr. S. D. Dougal, C.E., are making the preliminary parliamentary levels and survey for a line of railway to start from a junction with the West Cork line, about a mile west of Bandon, crossing the river Arrigadeen, below Inch bridge, through Ummera wood and Timoleague, passing between the Catholic and Protestant churches, on to the harbour of King, and from thence coastwise to Clonakilty, being about 14 miles in length. The promoters hope that the company formed for working the Deep Sea Fisheries, when they find that a communication between Clonakilty and Cork, with such a harbour as Clonakilty will afford for the further development of their operations, will join in defraying the preliminary expenses for procuring this bill.

At the meeting of the Atlantic Telegraph Company the report was adopted, and the directors authorized to apply to increase the capital to a nominal amount not exceeding 5 millions, and more immediately to issue the remainder of the company's capital, amounting to £800,000. The chairman stated that in 55 days to the 21st September the revenue from the cable amounted to £48,000, and that the directors hoped to increase the traffic by the reduction of the tariff.

PLANTING EVERGREENS.—The proper time for planting evergreen shrubs appears not to be well understood, for we see such work in progress in the depth of winter, which is the worst time; and few people think of planting in the moist warm days of autumn which is the best time in the year. Losses invariably occur among evergreens planted in winter, and frequently the dead trees are allowed to remain a whole season—ghastly objects in the midst of otherwise pleasing plantations, in the hope, we suppose, that they will come to life again. To be sure they do not always die outright, and there is, therefore,

the chance of a few shoots from the base if they are left alone; but it requires the growth of many years to make trees of them again, and they do not rank equal in height and bulk with their companions till about half a man's lifetime has gone by. When evergreen shrubs are moved in September, the losses are reduced to a minimum, provided the work is well done, and the trees push the next spring with the same vigour and freedom as those that have not been moved for years. For the planting of American shrubs, September and October are the best months in the whole year, yet this work is often deferred till spring, and the trees are hurried into growth by the increasing temperature of the season before their roots have made the least progress in the new soil they are planted in. In cases where extensive operations are in progress, the month of July is scarcely too soon for the planting of evergreen shrubs; August is a perfectly safe time; September and October are as safe and more convenient; and every other month in the whole year is more or less objectionable. The question as to the best time to move hollies is frequently raised. This undoubtedly is the best time, or say from this date to the end of next month; but we have moved hollies in the early part of May with such perfect success, we would make an exception in their favour except for this good reason, that in the event of a hot dry summer, hollies moved in May might not make a good start, for artificial watering, however carefully and constantly performed, is but a poor substitute for the warm rains and copious night dews which evergreens require for their well-doing, especially after having been transplanted.—*Gardeners' Magazine*.

The very last thing is a patent paper shirt—cost, 25 cents, warranted perspiration proof, and wears three weeks without washing!

The glass required for the Paris Exhibition next year would cover an extent of twenty acres.

A tunnel 1681 feet long is to be run under the Chicago river, from Franklin to Clinton streets, Chicago.

THE HEALTH OF DUBLIN.—In the Dublin Registration District the births registered during the week ending September 22nd, amounted to 156—84 boys and 72 girls. The number in the corresponding week of last year was 164. The deaths registered during the week were 164—77 males and 87 females. In the corresponding week of last year the number was 122. Sixty-five deaths from cholera were registered, showing an increase of 10 on the number registered during the week preceding; the number of deaths from cholera registered in each of the seven preceding weeks were 2, 5, 13, 15, 41, 52, and 55. Fourteen deaths resulted from diarrhoea; of these 11 were of children, in 4 of which the certified cause of death was diarrhoea and vomiting, and in one adult the cause of death certified was choleraic diarrhoea. Six deaths were referred to fever. Two deaths were referred to croup, and like numbers to whooping-cough and erysipelas. Twelve deaths were caused by convulsions. Phthisis or pulmonary consumption caused 11 deaths. Six deaths were ascribed to bronchitis, and four to pneumonia or inflammation of the lungs. Three deaths from heart disease were registered. The Deputy-Registrar, No. 3, North City District (Blackhall-street), makes the following statement:—"The inmates of houses in the undermentioned streets and adjoining alleys and courtways are in the habit of throwing filth and all sorts of refuse into the space before the doors. I strongly advocate the flushing of such places at least twice daily. The streets referred to are Greek-street, Mary's-lane, Beresford-street, Church-street, Bow-street, and Barrack-street." Forty-seven of the deaths registered during the week occurred in hospitals and other public institutions; of this number 6 took place in the North Dublin and 5 in the South Dublin Union Workhouse. The number of deaths registered in the entire of the Dublin Registration District during the week, represents an annual ratio of 27 in every 1,000 of the population by the Census in 1861. In London the ratio was 23 in every 1,000 of the estimated number of inhabitants; in Glasgow 22; and in Edinburgh 19.

TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

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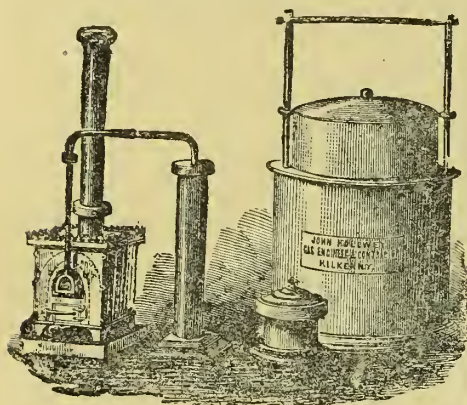
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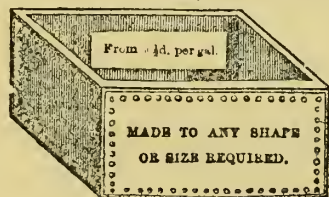
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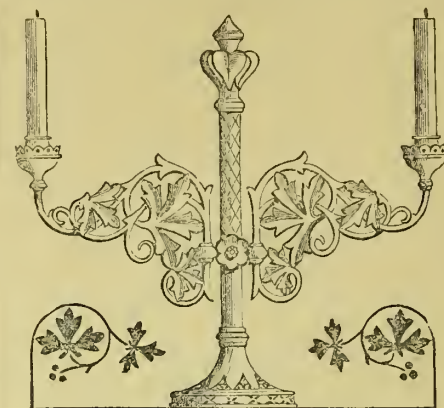
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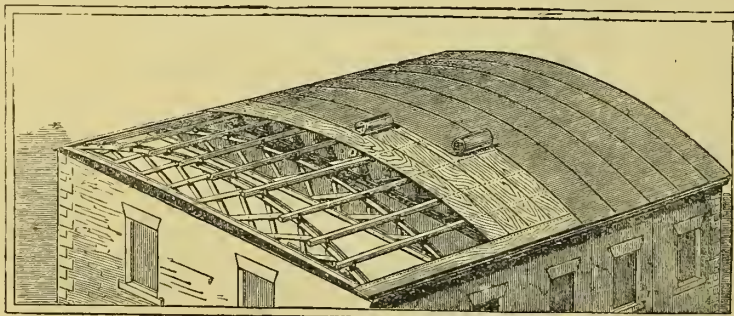
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WILLIAM DALY, Secretary.

Offices of the Company, 27, Dame-street,
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OCTOBER 15, 1866.

1st & 15th
OF EACH MONTH.

VOL. VIII.

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NOTICE.

It is respectfully requested that Subscribers and others who have been furnished with accounts from this office will send a remittance for their respective amounts at EARLIEST CONVENIENCE. Stamps taken in payment.

Contracts.

TO BUILDERS, CONTRACTORS, &c.

THE Commissioners of Works in GRANGE-GORMAN PRISON, in pursuance of a presentment, made at Michaelmas Term, 1865, will receive Tenders for certain Works, as set forth in a Specification to be seen in the Office of EDWARD HENRY CASSON, Esq., 25, Harcourt-street, a detailed estimate to accompany each Tender to enable the Commissioners to accept a portion of a Tender if they think proper. The Commissioners will not be bound to accept the lowest, or any Tender, or part of Tender.

The Contractor must give security in double the amount of his Tender by Bond to her Majesty from himself, and two securities to be approved by the Commissioners.

Sealed Tenders directed to me, and marked on the outside "Tender for Works," to be left in the Office of the Board of Superintendence in the City Hall, up to 2 o'clock, p.m., on Friday, October 19th, 1866.

JOHN O. BONSALL, Chairman.

Dublin, October 1st, 1866.

TO CONTRACTORS.

The Corporation for Preserving and Improving the Port of Dublin will receive Tenders for the ALTERATION of one of the Sheds on the North Wall into

A TRANSIT SHED. Drawings and Specifications to be seen at the Office of the Engineer, BONDIN B. STOKER, Esq., North Wall.

Tenders to be made on special Forms, which may be had on application, and sent through post, prepaid, endorsed "Tender for Transit Shed," and addressed to the Secretary, Ballast Office, Westmoreland street, on or before the 25th instant.

The Corporation does not engage to accept the lowest or any tender.

By Order, WILLIAM LEES, Secretary.

Ballast Office, Dublin, October 12th, 1866.

NOTICE TO BUILDERS

THE ECCLESIASTICAL COMMISSIONERS FOR IRELAND, on or before the 20th day of October, 1866, will receive Proposals for

ENLARGING THE CHURCH OF
BALLYMONEY Co. Antrim.

According to the Plans and Specifications, to be seen in the hands of the resident Ministers of the Parishes.

The lowest Proposal will not necessarily be accepted. Each Proposal to be forwarded sealed, prepaid, and addressed thus:—

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Fees—Females: 1s. 6d. per month; 7s. per session of five months. Males: 2s. to 3s. per month; 2s. to 12s. 6d. per session of five months.

Classes for Ladies and Gentlemen from 10 to 3 o'clock. Fees: 3s. to 15s. per month; 12s. to 60s. per session of five months.

A Prospectus, setting forth in detail the Fees and Hours of instruction, will be shortly issued.

The Works executed in competition for the prizes offered by the Society, must be sent in on or before the 15th December, 1866.

The Exhibitions of the Works executed for the Taylor Prizes and Scholarships will be held in the month of November, 1866. Works intended for this Exhibition to be sent in on or before Saturday, 10th November, 1866.

Competitors for the Taylor Art Prizes are to apply, according to a form to be had on application at the Society's House.

WM. EDWARD STEELE M.A.,

Assistant Secretary.

Kildare-street, September, 1866

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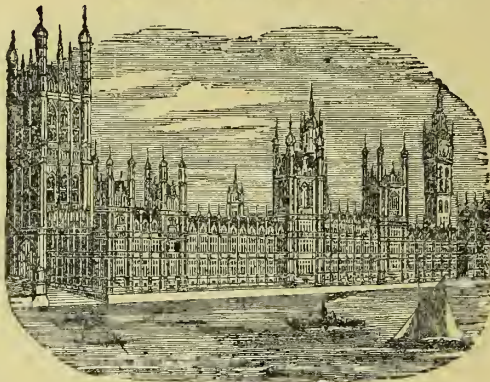
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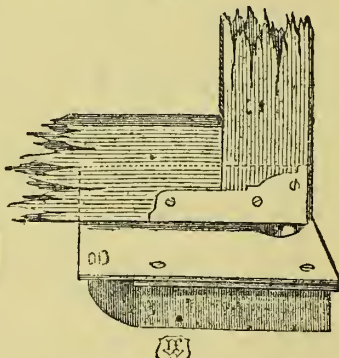
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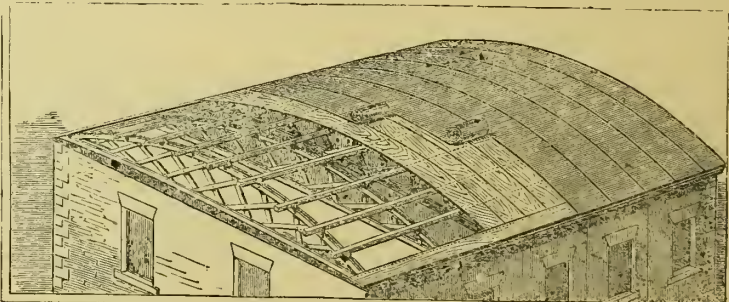
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The Dublin Builder.

VOL. VIII.—No. 164.

THE ROYAL DOWNSHIRE GRANITE QUARRIES, CASTLEWELLAN.



WHO has not heard of Dolly's Brae? We do not refer to it now historically, but geographically. It is not for the BUILDER to be the Homer of that epic—the deeds there done are too recent—and the quarrel itself is one about which "least said is soonest mended,"—but not far from this famed locality, the enterprize of an individual, backed by English capital, has opened up quarries of granite of a most superior description, worked in a methodical, business-like manner. To many persons it may appear to be a matter of no great novelty—with extensive hills of granite bordering the south side of the City of Dublin, and stretching far away into the County of Wicklow,—a dozen granite quarries more or less would seem a matter of mere indifference—why every building in Dublin is built of granite—our streets are paved with it—we use it for every purpose—bring coals to Newcastle as soon as granite to Dublin!—very true; but there is granite and granite, and nearly all that is used in Dublin is of the most inferior quality, but little removed from that form of it which is vended by the parties who make our streets vocal with the cry of "Free-sto-o-o-ne!" with which slatternly housewives smear over and partially conceal the dirt that they have never been taught to remove. From freestone, looked on as at the bottom of the scale, we ascend through the ordinary mountain stone, used principally for rubble work, common flagging, cills and quoins—all of the most rubbishy description, both as regards material and workmanship,—to the County Wicklow granite, commonly known as "Golden Hill," "Ballyknocken," &c., which is generally of a good colour, free from iron stains, (if the quarryman is quite certain that any stones that exhibit them will be rejected), and fairly worked, if the architect be not too precise about the mouldings being true to his drawings, and as to the sharpness of the angles; and, moreover, possessing strong affinities for the city smoke, and a strong tendency to resolve itself into its primitive elements, so that after the lapse of say 20 years, the arrises have vanished into a natural rounding off of greater or less irregularity, the mouldings are pleasantly varied by fillings of smoke-deposit and exfoliations, and the plain face looks as if it had been picked over preparatory to its being chiselled and so left. There is only one kind of granite ever supplied in Dublin that deserves the name, or carries out, in fact, the idea attached to the words—"hard as granite;" we mean by the word a material durable as time itself, that can transmit to after-ages the story told

by the form that man has given to it, when the nation itself has passed away—its language lost—its history faded into the dim haze of tradition, and the tradition itself hardly to be distinguished from the myths that are to real history what the mirage of the desert is to a real landscape. How laughable any such association is in connexion with the granite of the City of Dublin. In none of its buildings probably is the granite more than 70 years old—in none more than 100—and look at the state of our buildings,—shabby—eroded—mutilated—patched with cement, or, last and commonest degradation of all, *painted*! Yet there is really good granite to be had about Dalkey and Killiney;—in any other part of the United Kingdom but this these granites would be extensively worked, and a market found for the produce both at home and across the Channel; but from whatever cause or causes it arises, it is not done; the stone is not used at all, or so seldom* as only to raise our wonder that it is not more used.

As a contrast to this state of things, Mr. Scott has commenced, in this out-of-the-way corner of the Co. Down, two quarries of granite of the hardest, densest quality, and is astonishing the natives by sending down to be shipped at Newcastle, the Scarborough of the kingdom of Mourue, blocks of from 15 to 25 tons weight each for use at the Prince Consort Memorial in Hyde Park, and is ready to supply any quantity in any size from a 3 in. paving set to a polished shaft 30 feet long; and this is actually being done every day. There are powerful cranes at the quarries and place of shipment, and a traction engine, "the Pioneer," marches along the country roads at the grave pace of about two miles an hour, indifferent to hills—and there are a few, and trying ones, in those parts,—its gravity only alloyed by a fussy puffing and snorting which somewhat discomposes the country horses, hitherto unconscious of steam in any form, and naturally startled at so formidable a rival who does the work of 10 pairs of them at once; the unrepellable genius of the country has broken out *apropos* of this engine, its accompanying carriage with its freight, amounting together to not much less than 30 tons, has naturally, here and there, broken down weak gulleys, or buried itself to the axle in places where the skin of metalling has been barely sufficient for the light country traffic in dry weather, and, as a matter of course, the county authorities, instead of being ashamed of themselves and quietly repairing their roads and drains, have brought actions against Mr. Scott to compel him to maintain every road that their parsimony or neglect has left unfit to bear a traffic, which, on a fairly kept road, ought, from the great breadth of the wheels and the slowness of the speed, to be most beneficial. The Co. Down road-makers are like that Scotch congregation that proceeded against their minister for preaching Professor Archer Butler's sermons to them; they decidedly do not know when they are well off.

* The only building in Dublin in which Dalkey granite has been used to our knowledge is on the west front of the Rolls Court, where it is mixed with stone from Golden Hill; the two qualities are clearly distinguishable.

The granite produced in the present quarries is of a deep grey tint, nearly, but not quite so deep, as the Scotch grey granite, of a very close, fine grain, with very little mica, and takes a very high polish; and the working of the quarries is being carried on in a business-like manner; and we do hope the Dublin architects will no longer be importing a material in no way superior when they can be supplied at home. At the present day, when we are looking in every direction for materials that will afford a polished surface, not liable to deterioration by the influence of the weather, a true, proper, granite is of all the most suitable, because it retains its lustre unimpaired by any influence short of actual and extreme violence, and from its great strength need never cease to be an actual part of the construction, while still retaining its ornamental character.

CANADIAN SCENES—II.

In the month of April, not many years ago, I was engaged as the principal engineer of the North Shore Railway—Quebec to Montreal (direct)—throwing up, at the same time, a similar appointment that I held on the Quebec and Richmond Railway, which became amalgamated with the Grand Trunk of Canada R.R.

I had some difficulty in organizing an efficient staff of persons—not but there were many men of experience in the colony at the period, but owing to directors and shareholders having protégés to recommend me for employment.

I organized two efficient exploring parties, one commencing at Montreal, the other at Quebec, and meeting at Three Rivers, which was about midway.

The Montreal division was timely and well carried out under the superintendence of an old colleague of mine, F. Arthur Doyle, C.E., whose reputation as a careful and efficient engineer is well known in both hemispheres. The Quebec end was under the management of Edward Grubbe, C.E., since pursuing his profession with similar success in India, along with T. Hardinge Goings, C.E., another old familiar friend of mine.

The face of the country on the north bank of the St. Lawrence, between those two cities, offered no engineering difficulties whatever, provided a man kept back some three or four miles between Trois Rivières and Terrebonne, so as to avoid the inundations that periodically take place between Berthier and Machiche on the one side and Berthier and L'Assomption on the other. The "digue," or dam, is caused by the ground ice impeding the currents of the rivers St. Lawrence and Ottawa, and throwing their surplus waters inland over the low-lands and flat prairies along their banks.

I found the site we selected for the line of R. R. a very favorable one, the maximum gradient of one plane (only) not ascending 1 in 100—could not get an easier incline to surmount the ridge of hills about twenty miles north-west of Quebec. The "Khuyber Pass" some of us dubbed this place, in recollection of a similar impediment occurring

near Cahir, on the Waterford and Limerick Railway.

From this onwards to Three Rivers the country we traversed was very flat, and mostly through old French settlements, which were thoroughly cleared; it was, therefore, easy for engineering purposes—in fact, with the exception of bridging, the earthworks might be put down as a mere fractional part of the outlay necessary. We meet with three large rivers before we reach the centre depot (Trois Rivières)—the Jacques Cartier, St. Anne's, and St. Maurice; got favourable crossings at each river, the last the most formidable, the shallowest part varying from five to ten feet in depth.

Three Rivers has a population of about four thousand souls, the four-fifths of whom are French-Canadian habitants. This town was of old the capital of Canada, long before Montreal was known, and Quebec fell before the victorious Wolfe—the French government of the day, thinking this a more secure place for their archives, and a safer place for their persons from their wily neighbours (the Indians) than either Quebec or Montreal. Of late years it has become of more importance than it would seem to be to the pushing Yankee, as he scans it from the deck of the steamboat, when he glides down to Quebec or Stadacona.

Three Rivers has a splendid Roman Catholic Church and a Protestant Church, as well as a respectable convent and a bank; it returns one member (Mr. Pollette, Q.C.) to the provincial parliament. The old rotten wooden shanties, erected by the lumberman, are giving way, and in their stead one observes the red brick villa with its white balconies and galleries, and green jalousies or window-blinds; the geraniums showing the taste of the inhabitants, no matter their origin, whether French or English. The streets are better kept than they used to be, and so are the footpaths, and gas has been lately introduced.

From this on to Montreal the line I laid out passes near the hamlet of Machiche, and to the river of Berthier, and then takes a direct course to Terrebonne for twenty-four miles, the longest tangent I have met with in any country, and all through the "bush." Of the whole distance thus far to Terrebonne there is about 75 per cent. tangents or straight lines, and 80 per cent. horizontal, or nearly so.

This line, then, is unparalleled on the Continent of America for its unimportance in the way of difficulties; the main difficulty in my humble opinion, was to get men of energy and perseverance, with a combination of the qualities which mark out the Yankee as the best pioneer, and the Englishman as the safest and most successful colonist.

This railway will at a future day be carried out and built, when the population becomes mixed with the progressive English or Irish colonists, as the French are not, nor can they ever be, such pioneers of civilization as the two former nationalities.

The two parties I organized were composed of four engineers, two staffmen, or "rodmen"

(a l'Americaine), four chainmen, eight axemen, two commissaries, two cooks, and two tent-boys—in all twenty-four persons. Each commissary was directed to provide the necessary amount of provisions that his party would require during the four or five months it would be engaged in the field.

On one occasion, having to visit the Montreal party, for the purpose of giving them a month's pay, I met with an accident, which occurred in the following manner. The steamer Quebec was the crack boat at the time, plying daily between Quebec and Montreal, and invariably did the 180 miles in twelve hours, even against the current and tide as well; she was a favourite boat, and seldom failed to give satisfaction to the numerous Americans who make Quebec their summer resort when travelling in the Canadas. The fare for the 180 miles (including supper, bed, and breakfast) is two and a-half dollars, or about ten shillings sterling. The suppers they give on board these boats are very substantial, consisting of cold roast fowls and ham, boiled fish, and steaks, frequently trout and salmon, with tea and coffee, buckwheat cakes, and confectionary of the very best description and quality. Supper ended, parties separate into small coteries—some go above, and saunter about on deck, enjoying a whiff of the cool havannah, while others go below, and enjoy a rubber of whist, and a "brandy smash," or a "mint julep," at the bar. The ladies betake themselves to their own saloon, where they are provided with a piano and harp; and thus each party can amuse themselves according to their different tastes and inclinations.

After a walk for an hour or more on deck we found ourselves emerging from Lake St. Peter; the St. Lawrence spreads itself out into a vast sheet of water some thirty miles long by fifteen miles in width, between Three Rivers and Sorel. Thought it high time to repair to my berth—and dozing away for a short time—when the boat suddenly struck something which appeared to lessen her speed considerably, and instantly a rush of water might be seen, and felt too, in the long cabin which we occupied; immediately all was hurry and confusion: above and below and everywhere I observed uproar and "helter-skelter;" men hurrying to and fro, women screaming, some running along the table, dashing the fanciful coloured lamps into fragments, when making haste to get on deck before the cabin became filled with the mighty rush of waters. I must confess my coolness on this occasion was worthy of me. I got up not over-hurriedly, or with much haste, ascended the companion ladder, got on deck, when to my great joy I observed that we passed all danger, as the captain had run the boat's head ashore on the point of an island, near Lanoraie, about fifteen or twenty miles up the river from Sorel. I had some delay in getting my baggage, as the entrance to the baggage-room was so strained and difficult to open, we were obliged to have recourse to the axe to break open the door. I quickly had my portmanteau and hat-case, and then

asked the captain's permission to get one of the boats to take me ashore at Lanoraie, when myself and a few others (who knew how to make a virtue of necessity) got a French-Canadian woman to provide us with the usual breakfast of the country, consisting of an omelette, fried pork, and the eternal green tea, which was the best part of the repast at the time.

Two of the party and myself got an American conveyance then to take us to Montreal, about 30 miles farther. Having quite recovered from the disarrangement this "shipwreck" put me to, I found a favorable junction that we might make with the Montreal and Ottawa R.R., then so far advanced as that a vigorous commencement had been made by the contractors (Messrs. Sykes and de Bergne), were it not that the Grand Trunk influence put a "damper" for the time upon all projects of the kind in Canada. No matter how legitimate the project, it could not succeed when opposed by this gigantic and profitable undertaking!! The government officials at the time in this beautiful country were leagued in open hostility to all other projects but the Grand Trunk Railway of Canada, from the governor-general and his prime minister down to the very messengers in the government offices.

Montreal, so named by the French of the day from a mountain in its vicinity called *Mount-royal*. The Indian appellation, Hoché-laga, is a much prettier name, and more poetical; I wonder it was abandoned.

This city is, without exception the finest in the Canadas, whether for the magnitude and splendour of its churches; the excellence and accommodation of its market buildings; the splendour of its hotels, and the extent and importance of its quays and canals. Its population, like that of Quebec, is mixed—one moiety being from the "Emerald Isle," the other mainly composed of descendants of the French emigrés.

Montreal has a much more European type than either Quebec, Kingston, or Toronto; it has its "Champ-de-Mars," Place d'Armes, and Hotel-de-Ville, like Paris; the latter building is on a grand scale, facing the river, and of equal proportions with the Dublin Custom House. The ground floor of this building is devoted to a market-place vieing in size with Covent Garden, London. The mayor and corporation hold their meetings here; the municipal police also have their offices in it, under an Irishman named Hayes.

The hotels in Hoché-laga are first-class: Donegana's, the most select; the St. Lawrence Hall, the next, and best for the commercial class. The others are not to be passed by in silence, namely—the Franklin House, kept by a fellow-countryman, of first-rate abilities. The Montreal and Ottawa hotels rank in the same scale as any of the above, and are mostly frequented by Americans. It is in its capitally macadamized streets and paved footways that Montreal takes "the palm" from muddy little York (Toronto) or antiquated Stadacona (Quebec), and leaves them in the shade.

The leviathan G. T. Railway Co. have

built extensive workshops (rivaling those at Crewe) at Pointe St. Charles, adjacent to the great Victoria Bridge, which is nearly two miles in length, and makes Jonathan stare, which is not surprising when one contemplates the crushing weight it has to repel when the ice comes against its piers with such tremendous force each succeeding spring.

I must close this paper now, and on a future occasion will have something further to say of this highly interesting city and the St. Lawrence River, up to Kingston, the Bay of Quinte, and the thousand isles.

Dundalk, Oct. 12th, 1866.

IRISH CIVIL SERVICE AND GENERAL BUILDING SOCIETY.

IN our last No. we gave the report read at second annual meeting of the above society. Subjoined will be found an abstract of the proceedings subsequent thereto. The chair was occupied by Alex. Parker, Esq., J.P., Vice-President of the Society.

The secretary (Mr. Alfred H. Mercer) having read the report,

The chairman said that this society, like a number of far greater institutions, had an exceedingly modest beginning. He then alluded to Mr. Daly's former connection with the society, and observed that when this society was instituted it was new to the City of Dublin, and at their first meeting in the Rotundo, he (the chairman) ventured to predict a great success, on two special grounds. The first was, the great success that attended every building society in England, that was managed with honesty and prudence. The second ground he had for predicting success was, that he knew the general character of the gentlemen of the Civil Service; he knew a great many of them personally; he knew that they were men of intelligence, of business habits, and of honourable character. He believed if these gentlemen only took a real interest in the matter, their undertaking would be attended with success. The result had been what they all had hoped for—the society had a slow but sure and steady progress, nothing to intoxicate, but everything to comfort and cheer. Its first year's receipts amounted to £5,300—a very handsome start; but the second year amounted to £7,474, being nearly nine and a-half more than the first year's receipts. During four months of this year their receipts amounted to £2,725, and if they multiplied that by three they would have £8,175 as the probable receipts for the present year, thus realising in three years a paid-up capital of £21,000. There was nothing in all this to excite very great astonishment, but there was something to show that the society was gradually winning the favour of public opinion, and that the society was satisfactorily discharging its duties towards the public. These societies had taken such a hold in England that it would be many years before societies in Ireland could at all come up to them. One great society absolutely received in deposits £10,000 a week. The chairman, after some further observations, earnestly recommended the perusal of a pamphlet written by one of the directors, Mr. R. H. Jephson, and which fully explained the principles and objects of building societies, and the benefits to be obtained by a connection with them. Copies of this pamphlet could be got from the society for 2d. each. He wished they could afford to circulate them gratuitously. The chairman then quoted figures to show the great extent to which building societies in England carried on their operations. He explained the various items in the balance-sheet, and urged that persons who had saved small sums of money would find it to their advantage to deposit them with building societies, where they might do so with the most perfect security, and in return receive a satisfactory dividend. He moved the adoption of the report and statement of accounts.

Mr. James H. Owen seconded the resolution. Having referred in general terms to the flourishing state of the society, he proceeded to explain the form of the statement of accounts laid before the meeting, and with respect to which some complaint had arisen. The members of the board had spent a great deal of time over the accounts, and got them into a very satisfactory state. But they were not professional accountants, and the auditors, on examining the result of their labours, did not like the form in which they were placed, and they accordingly drew them up, as the meeting now saw them, and it was satisfactory to observe that the result arrived at by the auditors was a close approxima-

tion to that by the directors as to have little more than a difference of £5 between them. They had intended to have made up the accounts solely as regards last year, but they found it impossible from the time they had to do it. During the two years and four months they were established they had issued loans to forty-three shareholders, varying from £25 to £1,000. Two of these had been paid off. The difference of expense of the three successive years was both marked and satisfactory. The first year it was £500, the next under £400, and he felt confident that during the third they would be under £250; at the latter rate they found they could go on increasing their business to ten times its present amount. During the last year the number of members joining was small as compared with the first year; but this was only to be expected in all such undertakings. The withdrawals, too, were considerable; but many of these had returned, and no doubt, their example would be followed by others. The facility afforded to members to withdraw had been of great service to the society, inasmuch as it removed one of the principal objections to joining it. There was an item to which it was necessary to refer—that was a gratuity to Mr. Daly, their late secretary, £100. It should be remembered that to that gentleman's exertions the society owed its existence. He had been at considerable expense in working it up, and it was thought by the directors only fair to give him some small compensation.

Mr. George Smith protested against the form of the accounts. Instead of its being a report of their proceedings of the previous year, it extended over the transactions of two years. He further objected to the item of £100 gratuity to Mr. Daly, not on personal grounds, but that the matter should have been brought first before the shareholders. He had been kindly furnished with an analysis of the accounts of the society for the last year, since he had entered the room, and he thought that would have been more satisfactory to have placed before the meeting than the statement submitted to the members.

Mr. Owen explained that the accounts had been accurately and satisfactorily put before the shareholders, but that was the form in which the auditors chose to put them together. With regard to Mr. Daly, he thought there should be no question about the matter, as he had taken up the society when it was utterly new to them, and to him was mainly owing its present successful position. The directors did not deem it polite, to say the least of it, to supersede the officers appointed by the society to draw up their accounts, who, if they erred, did so as regards the form and not as regards the matter of the accounts.

The chairman said he had the analysis given him, and would read it if the members wished.

In reply to a member,

Mr. J. H. Owen stated that non-participating members were those who simply lodged their money with the directors and got their stipulated per centage. With regard to their authority for this he referred the member to the rules.

After some further discussion, the report and statement of accounts were unanimously adopted.

Dr. Carte having addressed the meeting on the benefits attached to building societies generally,

Mr. W. H. Hardinge moved that the directors do abolish the annual charge of 3d. per share.

Mr. R. H. Jephson seconded the motion, which was carried.

On the motion of Mr. Smith, Messrs. Handcock and Young were re-elected auditors for the ensuing year.

Mr. Owen moved that Mr. George F. Dunn and Mr. W. H. Hardinge, the out-going directors, be re-elected.

Mr. R. H. Jephson, one of the directors, in seconding the resolution, which was carried, stated that he fully concurred in the propriety of abolishing the small annual fee at present payable by members, the total amount realised by it being inconsiderable, while the inconvenience of collection was great. With regard to the position of the society, he considered it unnecessary, from the comprehensive manner in which their esteemed president, Mr. Parker, had explained in detail its transactions during the past two years, to add one word to that subject. He, however, thought it desirable, in general terms, to observe that the society was based on perfectly sound principles—that its object was becoming thoroughly understood and appreciated, and that it was rapidly winning its way in the confidence of the public. As an evidence of these facts, the society experienced no difficulty in disposing of the funds subscribed by the shareholders. Up to the present forty-three members had received advances to enable them to build or purchase houses, which would eventually become their own property, free from rent. The total amount thus advanced was £11,475, the smallest advance being £25, the highest £1,000—

the average being £267. The number of members amounted to 677, and the shares held to 2,346. The repayments in respect of advances were punctually made, and amounted to £1,200 per annum. The society is an extremely progressive one, and the paid-up capital promises in a few years to amount to a large sum. If with a gradually formed capital of about £11,000 the society could put so many of the members in the way of realising valuable house property, and at the same time be in a position to pay investors a dividend of 10½ per cent. per annum, with a large capital much more good could be accomplished, and probably a large profit realised. The directors received numerous applications for advances, and he regretted to say that the granting of many of them had to be deferred in consequence of want of funds; for, of course, advances could only be made as a fund for the purpose became accumulated by the subscriptions on the shares. It was desirable that every application should be promptly granted, and that the utmost scope should be given to the society's operations; and, he would, therefore, urge those present to endeavour to get their friends and acquaintances to become members; by so doing they would confer an advantage on the society and a substantial benefit on those whom they might induce to join. The society may honestly be recommended as a safe and profitable investment. There is an entire freedom from risk in its pecuniary transactions, and *bona fide* security for every shilling placed in it.

James H. Owen, Esq., Chairman of the Society, moved the thanks of the meeting to Mr. Parker for his kindness in presiding, and for the ability and judgment with which he conducted the proceedings.

Mr. William Daly, in seconding the resolution, said that the shareholders were deeply indebted to Mr. Parker for his services to the society. He reminded them that when he had waited on him at the time of the formation of the institution, and represented the objects of the society and the advantages it would confer upon the country, he received at once his hearty and cordial assent to become one of their patrons. It was scarcely necessary to say that the name of such a man—one of their most respected and honoured citizens—insured the accession of others of like position and of lesser note, and hence much of the success of this institution was due to him. He would further remark that Mr. Parker had given to the directors the benefit of his cool judgment and sound advice when they required it. It was of incalculable advantage to them to have his assistance at all times, and his presence at their meetings. He (Mr. Daly) could not permit the occasion to pass without offering his acknowledgment of, and thanking the directors and the shareholders there that evening, for the kind terms in which they had repeatedly referred to his own services in promoting and forwarding this society. He could assure them that he had other objects than mere pecuniary considerations in giving his time and attention to the establishment of the association, as was evident from the fact now known to the shareholders. He had for several years studied the building society system as worked out in England and Scotland; and had observed, with feelings of astonishment, the marvellous progress made by such societies in London, and in several of the principal towns in England (to which he referred), and he felt that there was no reason why, with perseverance and judgment, they could not found and carry on with like success the operation of similar institutions in their own country. There could be no reason why the savings of the working man in Ireland might not be used to his advantage in securing for him the possession of his own home, and the other advantages to be obtained from these institutions. The security offered was necessarily superior to that given in most other commercial concerns; their property was secured by mortgages on real property of far greater value than the money lent. He concluded by exhorting the artisans and the working men of Ireland to come forward and give to these associations a hearty support—they were all calculated to confer great and lasting benefits upon themselves and their children. They would of their unaided exertions raise themselves in the scale of society, and advance the best interests of their own country.

THE CITY ARCHITECT.

On the 1st inst. an election for the office of City Architect (in room of the late Mr. Hugh Byrne) was held. There were only three candidates for the post—Messrs. John Sterling Butler, Edward H. Carson, and Charles Geoghegan. The first named gentleman was declared elected. The appointment is for one year, at a salary to be fixed by the Committee.

The drawing for prizes in the Art Union of Dublin, announced to take place on the 8th has been postponed till the 29th inst.

NORTH OR SOUTH?

WHEN one gives his time freely to the careful perusal of an ambitious article, like that headed "Drifting or Sailing?" in your issue for the 15th September, he naturally expects to be compensated by some degree of enlightenment on the subject. Such was my hope on taking up the article in question, and I am bound to say, that after reading it I laid aside my BUILDER with a keen sense of disappointment. Mr. T-Square, as the writer of "Drifting or Sailing?" signs himself, can have no reasonable objection to fair criticism, particularly as he desires so emphatically that some one should "hold up the mirror;" and this is why even I venture a few observations on the question he proposes, and the manner in which he has treated it.

Poetically, he relates how, on his holiday, he "paddled his canoe" "into a lake under a pretence of sketching," and how he got moored among the weeds, he forgot to sketch, and "spent a lazy morning thinking of things in general and nothing in particular." Then he watched "the clouds and their shadows passing over the hills . . . carrying genial rain to some parched and thirsty pastures" and suddenly he descends to "things architectural." After a short reflection as to whether architecture is living or dead, and whether it would be a desirable thing for one to throw in his lot with it over and above the great consideration of "food and drink," his thoughts go back to his holiday of last year, whence they rapidly course down to "the worry and turmoil of his every-day work at home in the architectural mill," when suddenly they are arrested by an "idea received from the scrap of paper which an hour before was the wrapper of a sandwich whereon he had been regaling;" of course the wrapper of an architect's sandwich must have been an odd page or two of an old "Architectural journal" containing a portion of the "used up" controversy "Classic v. Gothic, and so on." But the "idea" only stopped him for an instant. Off he sets again discoursing, to borrow his own words, "on everything in general and nothing in particular" till he reaches the end of the second column, where he seems about to take up the question he proposed to discuss.

One would expect here at least to find something, after his sweeping condemnation of "Brown, Jones, Robinson, and Co., in the mean and hopelessly-to-continue mean and pretentious chapel architecture," but *montes parturiunt et ridiculus hunc nascitur*, he only gives us in the spirit of hero-worship the usual laudation of three well-known architects. Gravely assuring us that it is "neither in overgrown hideous railway stations or vulgar monster hotels" that we are to seek for art (very novel information this for his brother-architects), he tells us that "architecture is not drifting, but sailing." "Whence," he asks, "is this coming school of architecture from north, south, east or west?" "North," answers T-Square ("being a Briton"). If I catch his meaning clearly, it seems to me that according to his theory, he would have us believe that the rising school of architecture, which he calls the "British School," is one which, resting on the basis of the Pointed styles of the North, is pervaded throughout by the feeling of these styles, and an adaptation of them to the requirements of the time, otherwise how can it be called a "British School?"

My purpose here will be to show that our ecclesiastical architecture owes much, very much, to the foreign element which of late has been imported so extensively into this country from France and Italy. Since attention was

first drawn to the architecture of these countries, has not "our own national architecture," (as T-Square calls it) been to a remarkable extent superseded? It is a striking fact that many of the best churches recently erected have been treated on "Early French" principles, as anyone at all conversant with the works of our foremost men will easily see.

In those splendid buildings which have been "raised" within these few years for civil and commercial purposes, a decided and growing partiality has been shewn for Italian Gothic and its various modifications. For examples of this I have only to refer to the many good and truthful buildings of this kind that have lately added so considerably to the architectural beauty of this city. Again, a manifest leaning towards the general breadth and bold harmonious detail of the Southern Gothic is easily detected, even in buildings professedly of English Gothic design, showing itself in various fashions—bands of colored or uncolored material, the introduction of horizontal lines, absence of buttresses, the occasional substitution of columns for mullions—items which, individually considered, are not perhaps of much importance, but taken collectively have a vast significance, as showing the tendency of the art. If, by his "British School," Mr. T-Square understands a school of architecture, formed and fashioned out of these foreign elements, it must be in the sense in which the late lamented Gibson would be called a sculptor of the "British School," though he lived and "thrived" on the Roman models.

For the clearer exposition of my meaning, I have given, in the accompanying illustration-sheet, a few rough and hastily drawn sketches, which, although not being actual copies from any buildings, will, I think, be recognised as bearing a "family likeness" to what I would call the two types of church building (for the sake of simplifying matters).

Sketches Nos. 1 and 2 represent, under two different treatments, the west, or entrance front of a church. No. 1 exhibits some peculiarities of the foreign treatment—a massive square tower, rising up on its own proper foundation, without the assistance of buttresses, crowned with a pyramidal stone roof, a rich rose window, with a deeply recessed doorway underneath, the introduction of bands, &c.—giving the idea of massive strength combined with elegance of detail. No. 2 is a sketch of which there are many examples—the old, well-known, stereotyped church. I do not think it necessary to remark on the respective merits of the two; the vigour and power of No. 1 contrasted with the weak and effete effect of No. 2, will be enough to convince any one (save and except those who, unable to do anything better, stick to No. 2, fearing, if they tried something else by "way of a change," to get beyond their depth) of the superiority of the former. There are many churches of the No. 2 type in the neighbourhood of Dublin, chiefly the works of the architects in the employment of the Ecclesiastical Commissioners. Happily, however, this style of church (designated Early English, Early Decorated, Decorated, as the case may be) is rapidly on the decline.

Nos. 3 and 4 are sketches of wheel windows, No. 3 showing the more bold and vigorous treatment, which is so popular just now with our best architects; its contrast, No. 4, will speak for itself; it bears a resemblance to a small window in a new church, now almost completed in this city.

Nos. 5 and 6 represent the same subject—a door,—differing widely, however, in the expression which has been given to each. I

need not add anything regarding them, as the sketches will be sufficiently explanatory.

Having hurriedly glanced at the influence of the architectures of France and Italy upon our own, it seems to me that, as the interchange of ideas between those countries and our own increases, and as the facilities of travel and rapid means of communication tend every day to widen it, so will our architecture be more and more impressed with the characteristics of southern feeling. T. H.

Dublin, October 12th, 1866.

THE CORPORATION.

A SPECIAL meeting of the Municipal Council will be held in the Council Chamber, on Thursday, 18th instant, at twelve o'clock, to receive and do or cause all necessary acts to be done upon or in relation to reports from the special committee appointed to consider the question of the purification of the river Liffey; and letter from Messrs. Barrington and Jeffers, dated 13th October, 1866. This meeting is called in pursuance of requisition presented to the Lord Mayor.

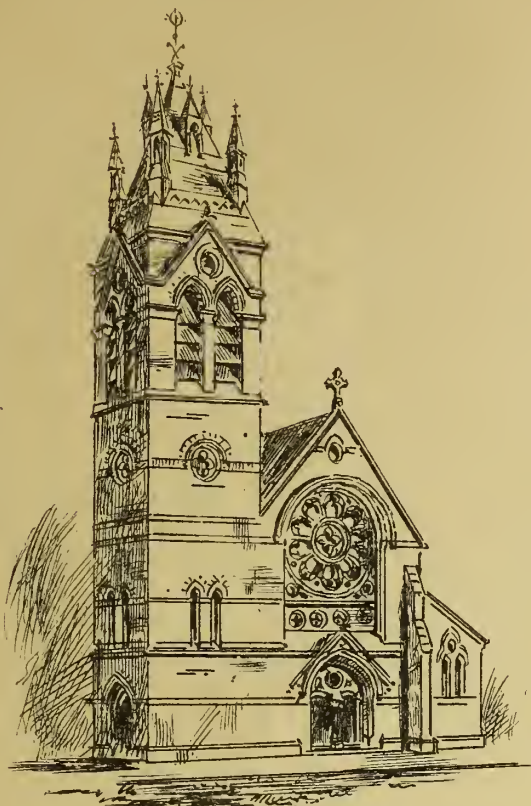
DR. CHARLES A. CAMERON ON POTABLE WATERS USED IN DUBLIN.

THE subject of the composition of potable waters from a sanitary point of view has of late years attracted much attention. It has been found, when an epidemic disease such as cholera is prevalent, that the use of impure water is very likely to induce an attack of the malady. Bad water is a frequent cause of diarrhoea. Typhoid fever has often been produced by the use of water contaminated with sewage. In 1860 a severe outbreak of fever occurred in one of the Sisters of Charity convents at Munich; thirty-one out of the 120 inmates were affected, and of these four succumbed to the disease. The well water which these ladies used was analyzed, and found to be impregnated with organic matter and nitrites. On replacing this foul fluid by a purer element the disease was instantly arrested. There is the clearest evidence that Asiatic cholera is an eminently contagious disease, and that it may be propagated through the medium of air or water. The Registrar-General and Dr. Snow and other medical officers of health in London have shown that the ravages of the cholera in 1853 and the present year were most severely felt in the districts where the water supplies were least pure. "A very sudden and localized outbreak of either typhoid fever or cholera is almost certainly owing to the introduction of the poison by water."—"Parke's Hygiene," p. 62, edition of 1864. During the Mexican war, in 1861-2, several hundred French soldiers stationed at Orizaba suffered severely from diarrhoea, induced by the use of water containing poisonous matter. Hundreds of similar cases are on record, and it is probable that thousands of persons suffer from diarrhoea, dyspepsia, and other diseases affecting the alimentary mucous membrane, in consequence of the use of impure water.

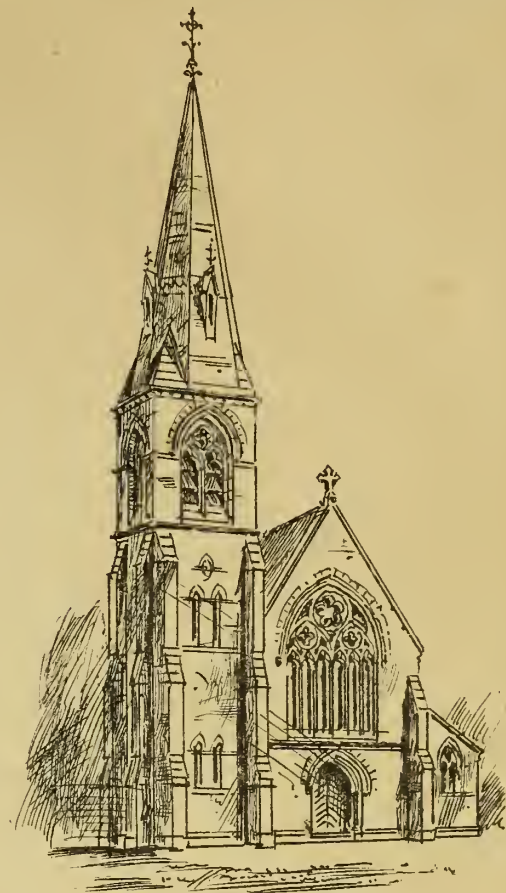
It is not always easy to determine what is an impure, and what is a pure, water. A fluid containing three grains per gallon of organic matter has often been found decidedly unwholesome, whilst another water with five grains of organic matter has been drunk for years without any bad results being observed. The nature of the organic matter exercises a considerable influence upon its wholesomeness: if derived from an animal source, it is almost certain to be injurious—if of vegetable origin (unless from marshes), comparatively innocuous. The following may be regarded as the characteristics of good water:—

1. Colourless, or with a very faint yellowish brown tint.
 2. When boiled, should not alter the blue colour of litmus paper to a red.
 3. Organic matters should not exceed two grains weight per imperial gallon.
- | | |
|--|---------------|
| Sulphate of lime (gypsum) .. | 3½ grains do. |
| Carbonate of lime (chalk) .. | 18 " do. |
| Magnesia salts .. | 3 " do. |
| Common salt .. | 12 " do. |
| Carbonate of soda .. | 16 " do. |
| Sulphate of soda (glauber salts) .. | 6 " do. |
| No nitrates or nitrites should be present. | |

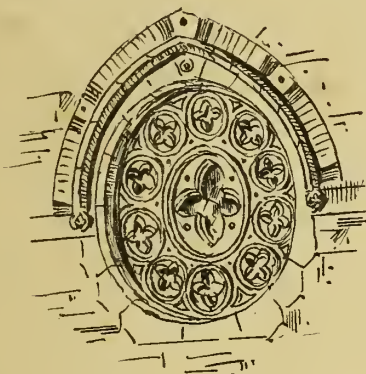
The presence of nitrates (nitric acid in combination with potash, lime, &c.), and nitrites (nitrous acid in combination) indicates that the water has, in all probability, been contaminated with sewage or animal faecal matters in some form. I have examined some specimens of water containing from four to five grains of organic matter per gallon, and yet quite free from both nitrates and nitrites; it would be difficult to say positively that they were unwholesome waters. On the other hand, I have analyzed waters that contained



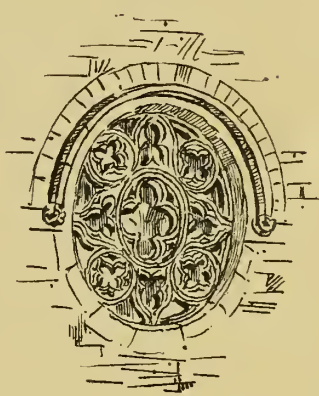
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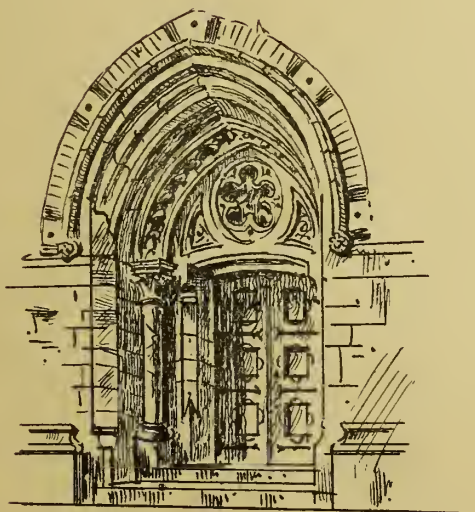
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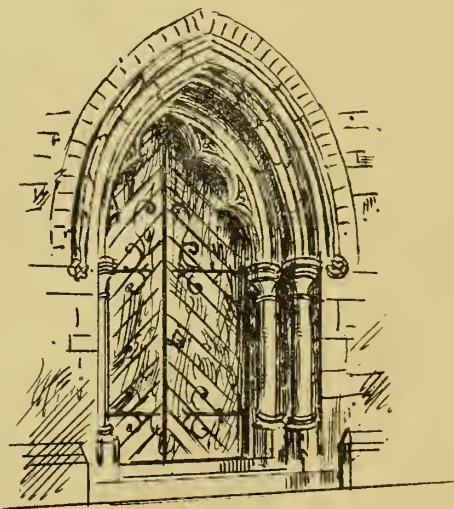
No. 3.



No. 4.



No. 5.



No. 6.

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only three grains of organic matter per gallon, and yet from the highly ammoniacal odour of the residue which they afforded on being evaporated, I could easily perceive that they were not fluids that could be safely drank during the prevalence of diarrhoea or cholera.

The flavour of water is not always a reliable guide as to its purity. When the flavour and odour are decidedly bad, the water is sure to be so; but there are pure waters which are far from being agreeable to the palate, and there are most decidedly unwholesome waters which possess a very agreeable piquancy. As a rule, spring water containing not more than 60 grains of mineral matter per gallon, and abundance of carbonic acid gas dissolved in it, is sparkling, clear, and well flavoured; but such water sometimes contains five or six grains of organic matter (derived from sewage) per gallon, and includes nitrates and nitrites; it is, therefore, not always wholesome water. I have lately analyzed the water of a well in Mallow, which was in great repute, owing to its pleasant flavour; I found, however, that it contained more than 5 grains of organic matter per gallon, and that, too, of the worst kind. Many persons who used this water died from cholera within the last month, and the well has been closed. Now, it is curious that the flavour of this dangerous water was much more pleasant than that of such pure water as Loch Katrine and similar soft waters. Absolutely pure water—distilled—is tasteless, and the waters of many upland lakes and rivers contain so little solid or gaseous matters of any kind that they are, as a rule, somewhat insipid. Some writers assert that potable water should contain at least 10 or 12 grains of earthy salts per gallon, in order to supply lime and other necessary substances to the body: but this opinion is not shared in by the great majority of the most eminent physiologists; and there can, I think, be little doubt that the smaller the amount of any kind of solid matter dissolved in potable water, the more wholesome it is. For washing clothes, and other detergent purposes, water cannot be too soft; every grain of lime in a gallon of water renders perfectly useless a certain amount of soap. A good infusion of tea cannot be made with hard water; the softer the water is the shorter the time necessary to "draw" the tea, and the more agreeable will be the flavour, and the larger the yield of this beverage. In this respect the Vartrey water, being extremely soft, is far superior to the hard water furnished by the canals.

The "hardness" of water is occasionally due to the presence of sulphate of lime and sulphate of magnesia. Water of this kind often produces diarrhoea. Common salt and carbonate of soda are frequently present in large quantities, especially in springs near the sea coast; unless they are distinctly recognisable to the taste, they cannot be regarded as unwholesome constituents.

COMPOSITION OF DUBLIN PUMP AND PIPE WATER.

In the following table I exhibit the composition of the pipe water supplied to Dublin and also that of several pumps, which the owners kindly allow the public to make use of. For the purpose of comparison the analyses of some of the waters used in other places are also given:—

Table A—Analyses of Waters used for domestic purposes in the City of Dublin.

No. 1. Pump in Farrell's yard, Marlborough-street, within one foot of St. Thomas's graveyard—Total amount of solid matters per gallon (70,400 grains,) 41.97 grains; fixed salts, 35.80 grains; volatile and combustible matters, 6.17 grains; organic matter (estimated), 3.10 grains; nitric acid, large; nitrous acid, none. No. 2. Carton's pump, Halston-street—Total amount of solid matters per gallon, 53.70 grains; fixed salts, 48.20 grains; volatile and combustible matters, 5.50 grains; organic matter, 2.50 grains; nitric acid, small; nitrous acid, traces. No. 3. Pump in stables, Princes's-st., North—Total amount of solid matters per gallon, 40.43 grains; fixed salts, 35.98 grains; volatile and combustible matters, 5.45 grains; organic matter, 3.20 grains; nitric acid, small; nitrous acid, traces. No. 4. Pump in livery stables, No. 7, Queen-street—Total amount of solid matters per gallon, 55.60 grains; fixed salts, 48.75 grains; volatile and combustible matters, 6.85 grains; organic matter, 3.25 grains; nitric acid, large; nitrous acid, traces. No. 5. St. Nicholas's well, livery stable yard, Francis-street—Total amount of solid matters per gallon, 38.63 grains; fixed salts, 33.08 grains; volatile and combustible matters, 5.55 grains; organic matter, 4.05 grains; nitric acid, excessive, nitrous acid, large. No. 6. A pump in a stable yard, Lamb's-court, Corn Market—Total amount of solid matters per gallon, 32.93 grains; fixed salts, 33.98 grains; volatile and combustible matters, 5.95 grains; organic matter, 3.86 grains; nitric acid, excessive; nitrous acid, large. No. 7. 212, Great Brunswick-street—Total amount of solid matters per gallon, 40.52 grains; fixed salts, 36.50 grains; volatile and combustible matters, 4.92 grains; organic matter, 2.28 grains; nitric acid, moderate; nitrous acid,

faint traces. No. 8. Dycer's, Stephen's-green—Total amount of solid matters per gallon, 50.37 grains; fixed salts, 44.24 grains; volatile and combustible matters, 6.13 grains; organic matters, 2.20 grains; nitric acid, traces; nitrous acid, faint traces. No. 9. Pump in stable yard, Lincoln-place—Total amount of solid matters per gallon, 58.43 grains; fixed salts, 51.17 grains; volatile and combustible matters, 7.26 grains; organic matter, 4.80 grains; nitric acid, considerable; nitrous acid, considerable. No. 10. Pipe water, North side, Peter-street—Total amount of solid matters per gallon, 19.05 grains; fixed salts, 16.00 grains; volatile and combustible matters, 4.05 grains; organic matter, 3.00 grains; nitric acid, traces; nitrous acid, faint traces. No. 11. Pipe water, South—Total amount of solid matters per gallon, 14.04 grains; fixed salts, 10.64 grains; volatile and combustible matters, 3.40 grains; organic matter, 3.10 grains; nitric acid, traces; nitrous acid, traces. No. 12. Canal water, Maquay-bridge—Total amount of solid matters per gallon, 22.16 grains; fixed salts, 16.10 grains; volatile and combustible matters, 5.06 grains; organic matter, 4.20 grains; nitric acid, large; nitrous acid, traces. No. 13. Canal, near 4th Lock—Total amount of solid matters per gallon, 14.56 grains; fixed salts, 10.62 grains; volatile and combustible matters, 3.94 grains; organic matter, 3.40 grains; nitric acid, traces; nitrous acid, traces. No. 14. River Vartrey—Total amount of solid matters per gallon, 4.10 grains; fixed salts, 2.25 grains; volatile and combustible matters, 1.85 grains; organic matter, 1.50 grains; nitric acid, none; nitrous acid, none.

Table B—Showing the amount of organic matters contained in the Waters used in various places.

	Grains per Imp. gal.
Thames water at London Bridge	2.89
Well, at Bishopsgate-street, London	6.60
Aldgate, London	7.10
Bride-lane, London	8.00
Glover's-lane, court, London	1.50
Glasgow pipe water (from Loch Katrine)	0.82
Manchester pipe water	1.25
Brighton well water	17.52
Well (near a church-yard) at Norwich	10.87
Well at Mallow	5.02
Well at Kingstown, Co. Dublin	3.50
†Bow Creek, Poplar (analyzed in September, 1866, by Dr. Lettichy)	28.00

I have only given in the above table (A) the amounts of mineral and organic matters contained in the waters referred to, considering it unnecessary to describe the composition of each in detail; I may, however, here state the complete analysis of the water of the Dodder river, which I made some time ago for No. 1 Committee of the Corporation. The water was taken at Templeogue, at the beginning of the city watercourse:—

Analysis of Sample of Water taken from the River Dodder.

This specimen was perfectly bright and clear, and contained free carbonic acid. It afforded, by a prolonged boiling, only a very slight precipitate, and the filtrate from this showed an alkaline reaction, specific gravity 1000.210 at 60 degs. Fahr. One imperial gallon contained the following substances:—

	Grains.
Organic matter (soluble)	1.217
Lime	4.210
Magnesia	0.379
Potash and soda	0.617
Sulphuric acid	1.110
Silicic acid and oxide of iron	0.186
Nitric acid	slight trace
Chlorine (combined)	0.827
Carbonic acid	3.098
Total solid matter	11.644

The pump waters described in Table A are, on the whole, of far better quality than the well water of London. Not one of them contains 6 grains of organic matter per gallon. The water of the pumps at Carton's and Dycer's establishments are tolerably pure, and their flavour is extremely good. The waters of the pumps at Corn Market and Lincoln-place contain an excessive proportion of organic matter, and include nitrates and nitrites in very sensible amount. The water of St. Nicholas's well is also very impure. At the present time I consider that they should not be drunk, unless after filtration through charcoal. The pipe water is far from being good, but it is less impure than the water of most of the pumps used in the city. The water of the pump near St. Thomas's Church is not so impure as that of St. Nicholas's well; but it contains a very large amount of sulphate of lime, and though no nitrous acid was detected in it, yet the presence of nitric acid was easily ascertained. After being boiled it remained extremely hard, owing to the presence of

* The water taken from this part of the canal is used chiefly in Irishtown, Ringsend, and Sandymount. I have examined it several times, and found that it is occasionally so impure as to be semi-opaque. I have seen the bilge water pumped out of boats, laden with manure, into this canal. Can we wonder, then, that the water of it is unwholesome?

† A coroner's jury found a verdict that a man died from cholera in consequence of drinking this water.

sulphates. On the whole I would suggest that this water should not be used for the present; indeed, the mere fact that the drainage which supplies this pump flows through the graves of the adjoining cemetery sufficiently proves that the water cannot be very pure.

The exact determination of the amount of organic matter in water is a task of some difficulty. It is generally attempted to be effected by evaporating a certain amount of the water to complete dryness, weighing the residuum, igniting it and weighing it again. The loss, it is supposed, represents the organic matter. If, however, there be sulphate of lime in the water, the residue will retain water in combination with this ingredient, which it is difficult to drive off, unless at a temperature which is likely to destroy the organic matter. Chloride of magnesium is also expelled to some extent at a high temperature, and nitrates and nitrites are decomposed, and in part volatilized. Permanganate of potash is decomposed when brought into contact with organic matter; hence we can measure the amount of organic matter contained in a sample of water by adding to it a standard solution of permanganate of potash. The permanganate solution is a rich red colour, which the organic matters change to a dark brown hue. The permanganate test does not give absolutely correct results; because if protoxide of iron be present in the water, it will be converted into peroxide, and if sulphides exist in it they will be changed into sulphates: in either case the permanganates will be decomposed. It is also certain that different kinds of organic matter require different amounts of permanganate of potash in order to effect their oxidation, i.e., complete decomposition. However, to one experienced in the analysis of waters, the permanganate solution affords results sufficiently accurate for all practical purposes. In the table I have shown the amount of solid matter which each water contains, the proportion of solid matter driven off at a red heat, and the estimated amount of organic matter. The latter I determined in the following way:—Having prepared a solution of permanganate of potash, I ascertained the actual quantity of it necessary to completely destroy one grain of dry sugar. When I found the same quantity decolorized by adding it to one of the samples of water above-mentioned, I concluded that one grain of organic matter was present: and in this way I estimated the amount of organic matter in each case. The colour of the residue during ignition is also an indication as to the amount of organic matter present. If there be three grains of organic matter in the residue, a slight blackening takes place during the ignition; with five or six grains, a perfectly black ash is obtained.

The nature of the organic matter is a point of considerable importance. That contained in the pump water is derived in great part from sewage and effete animal substances; the organic matter of the pipe water is chiefly derived from vegetables, and is less dangerous to health. This must be taken into account when comparing the two kinds of water. The Vartrey water contains nearly two grains of organic matter per gallon, but not the slightest trace of either nitrates or nitrites. The organic matter in this case is derived from turf, and the altered remains of plants in the soil of the catchment area from which the water is obtained.

PURIFICATION.

The organic matter contained in water may be removed by several means; firstly, by the addition of oxidizing agents, such as permanganate of potash, chromic acid, &c.; secondly, by filtration through charcoal. None of the many other methods which have been proposed appear to me to be so effectual. Boiling sometimes diminishes the amount of organic matter, and it checks, and often completely arrests, the fermentation of the organic particles. Nevertheless, mere boiling is not always to be relied upon as a means of rendering impure water pure. An excess of organic matter in water renders it unfit for brewing purposes, although the fluid is always boiled before the malt is steeped in it. If boiling prevented the injurious effect of the organic matters of water, this would not be the case. When, however, it is impossible to filter water containing much organic matter, the next best thing is to boil it; on cooling, the water will be found to have lost its flavour, owing to the gases which confer it having been expelled. The flavour may in great part be restored by aerating the water. The most convenient way to do this is to pour the fluid from one vessel into another, and back again for about twenty times, during which process gases will be absorbed from the atmosphere. Filtration through animal charcoal removes the organic matter completely. No. 13 of the waters referred to in Table A, on being filtered through recently ignited animal charcoal, was found by the permanganate of potash test to contain only 0.20 grains of organic matter per gallon, and probably this was not organic matter at all, but a trace of iron or a sulphide. One pound weight of animal

charcoal is, in general, sufficient to purify about 100 gallons of impure potable water, and when its power in this respect is exhausted, it can be renewed by the charcoal being heated to a redness for a few minutes. Until the city of Dublin is supplied with the water of the Vartry, and more especially during the prevalence of cholera and diarrhoea, the pipe water, and indeed water of every kind, should be filtered through charcoal of some kind. The cisterns and water barrels should be covered in and preserved from the light, and, together with the pipes communicating with them, should be frequently cleaned. Rain and very soft waters often dissolve lead; so that cisterns should, as a rule, be made of cemented stones or brick, or of slate; iron is preferable to lead.

CHARLES A. CAMERON, M.D.,
City Analyst.

*Note on the above Report, by E. D. Mapother, M.D.,
Medical Officer of Health.*

There can be no doubt that serious diarrhoea in ordinary years can be traced to the drinking of impure water, especially that contaminated by sewage or other animal matter. In times when cholera is epidemic the impurity becomes more serious by predisposing persons who drink such water to this scourge, or by actually spreading it, if the sewage from cholera haunts finds its way by soakage or otherwise into the earth from which the water springs.

Professor Cameron has demonstrated the presence, to an alarming extent, of organic matter and nitrous acid—the result of animal decomposition in the water from the following sources—which, therefore, ought to be closed, to accomplish which it is only necessary to appeal to the good sense of the proprietors.

METALLURGY.*

It is not a little curious to remark how many hints of practical value to even the most advanced, extended, and improved metallurgic processes applied to arts and manufactures, may be derived from the observation and study of the very early and rude practices of the most aboriginal or primitive metallurgists. No more interesting chapter remains to be written as an introduction to our great treatises upon the various branches of applied metallurgy than might be produced by tracing in a mixed archaeological, scientific, and practical spirit, the earliest knowable attempts of men everywhere to make mechanically available by forging, melting, and moulding, &c., the several metals, which the methods of the earliest and rudest smelters had first obtained. Such a chapter, which must necessarily embrace all that can be known of the materials, apparatus, and methods employed by rude or half civilized people, remote in time and distant from us as the earlier cradles of our race, would not be, in competent hands, a mere bit of learned dilettanteism. On the contrary, from such *origines metallurgicæ* suggestions of the most directly practical character often reach the mind prepared by scientific and practical information to extract them, and capable of advancing, in some point or other, what we deem our most modern and advanced knowledge in the modes of metal working. It would give a wrong idea, or at least impose a false restriction on our thoughts however, were we to limit the trace of early metallurgic methods merely to those of half civilized peoples. In some of the most ancient, and in many respects highly civilized peoples of the world, their peculiar social conditions, the reactions of creeds, despotisms, climate and much else, as well as the want of good and abundant fuel, and, in the great Asiatic plains, the want of metallic minerals, have concurred in keeping all arts almost stationary for ages. Metallurgic methods, amongst the rest, are now in Asia much what they were perhaps four thousand years ago. It is therefore but to point our leading thought, that we remark how many hints of value to the arts in modern Europe (to which all arts were originally imported from the East) have been derived from noticing the practices of the native Eastern workman, and add that much more of value remains yet to be acquired by a more extended, careful and enlightened observation of many of their rude and primitive methods.

The Bengali goldsmith and jeweller is still, as he was before Solomon's day, an itinerant workman, like our own almost extinct "tinker." His whole kit of tools is wrapped up in a bit of sheepskin. He sits down to work, it may be in the Sahib's verandah, to alter the English lady's golden ornaments, or reset her gems, or to recast and remodel the "bangles" of the native women. Aided by nothing extraneous beyond a few bits of charcoal, with the pasty clay of the boundless plain, he makes his furnace and his crucibles, as well as his moulds; and with the help of a palm-leaf fan, or a bamboo mouth-blowing

tube, can melt and cast some ounces of gold and silver, and can make and chase the most delicate and complex reliefs or flagree work; in designs the ideals of which are older than the oldest history of the ancient land that has given him birth.

Beloochee and Afghan edged weapons, the forefathers of the famous Damascus blades, as these were of the equally famed Spanish-Arab "Toledos," unsurpassed as the first are at the present hour for temper, keenness, form, balance, and beauty, are forged and fashioned now, probably as they were before the dispersion of the ten tribes of Israel, and by methods and instruments the roughness and apparent inadequacy of which surprise the European workman, who, nevertheless has not yet rivalled their result.

In the exhibition of 1851 there was shown, amongst other metallic works from China, a large cast-iron pan, in form a segment of the surface of a sphere, and though of large diameter, its absolute thickness was considerably under one-tenth of an inch; its surface interiorly as smooth almost as if ground, though left obviously just as it was cast. Many of the ablest ironfounders in England looked with wondering admiration upon this specimen of the skill of an old civilization, but without being able even to guess how it was fabricated. Indeed, if our memory serves correctly, we believe it was Mr. William Fairbairn who judiciously drew the attention of British founders to this humble Chinese pan, as one of the most interesting and instructive of the whole class of metallic objects then exhibited.

A Scottish "pot-founder," or maker of hollow ware, prides himself upon a moderate sized cooking pot of about one-eighth of an inch thick; and common semicircular eavesshoots for houses are deemed to have reached the limit of thinness and cheapness at something above that average thickness; but we believe no founder or workman in Scotland or England would undertake to produce a vessel of the form of a "sugar teache" of between two and three feet diameter, and to cast it only about one-sixteenth of an inch in thickness.

Well, these are illustrations that ancient and primitive art has its lessons still to convey, and that rude and simple-looking tools and methods are not in all respects to be despised. And we might multiply our illustrations by examples taken from much nearer home. Within less than a century since there still existed in England a race of itinerant bell founders. They were mostly found in the south western counties, though we believe also in the fen country and on the north eastern side of England. These men were reputed as gypsies. The rings of bells in several of the rural churches of Somerset and Devon were cast by these wild workmen. The writer's own father recollected traditions, the particulars of which, even to pointing out the site of the temporary bell foundry, were, in his early life, handed down in his native parish in the north of Devon, respecting a ring of six church bells thus cast. There were three men, an older and two younger bell founders, who went about with their families and tools in gipsy style. When they had bargained to cast a set of bells, they went about the country buying up old copper and pewter, chiefly old vessels and household stuff, much of which they got from Bristol; and, though apparently poor, money for such purposes seemed always forthcoming from unknown hoards. Having collected sufficient material in the case here referred to, the men and their families returned to the parish, and at the side of a high-banked Devon ditch, upon a small "moor" or bit of dry common land, established themselves. They built their own air furnace from adobes, or sun-dried bricks, of the loam on the spot, and made their loam moulds of the same. The only roofed building was a "lining," as a lean-to roof is called in Devon, of a few feet square, thatched with furze and straw to keep the moulds from a chance shower, and this was all burnt to light and dry the furnace. When the great day came for casting the bells, all the little parish was in commotion, and collected to see the operation; and much entreaty was made by the artists for silver coin "to improve the metal; and some, it was said, was actually thrown into the furnace mouth by the hands of the rustic donors, who had a shrewd suspicion that otherwise it would reach the pockets of the founders only. The six bells were cast, and with perfect success, and the writer has still in his ears their sweet though coppery tone, as mellowed by distance they sounded on summer evenings in years gone by. These bells are small, the largest probably not more than six or eight cwt., but they are in perfect tune; and to produce even such a peal, with such appliances, would not be readily undertaken nor instantly done now by the best workman in the great establishments of our Warners or Meyers. There are probably scores of rural parishes in England, the bells of which were made in the same way as were those. With these wandering bell casters, one can scarcely doubt that there must have become extinct many means and methods resulting from that inventive mother Necessity, of great ingenuity, simplicity, and value.

THE PURIFICATION OF THE LIFFEY.

In our last issue we laid before our readers some remarks which appeared in the *Freeman's Journal* on the subject of the purification of our city "main sewer." Mr. Bazalgette's plan (which is only an extension of Mr. Neville's) appears an advisable method of effecting such a scheme. With the already heavy burden of taxation, however, we question if the citizens will consent to the outlay of some £200,000 for the purpose. The following report was prepared by a special committee, and laid before the Municipal Council:—

"Your committee have to report that, in compliance with your suggestions, they instructed Mr. Neville to communicate with Mr. Bazalgette, the eminent engineer, who carried out the great sewage works of London upon an expenditure of four millions of money. Mr. Bazalgette arranged to visit Dublin, and devoted several days to a careful examination of the entire district, and subsequently met your committee in company with your city engineer, and stated generally his views as to the facilities that existed in Dublin for effecting the purification of the Liffey, and generally so improving the sewage of the city as to materially benefit the health of the population. He has undertaken to prepare a full and detailed report, with plans and estimates, which cannot be ready for some weeks, as some additional levels and surveys will have to be made to enable him to render his report perfect. His opinion (as stated by him to the committee) is that it would be imprudent to carry out a less perfect system, when a perfect system at a moderately increased expense is within reach; and, with the view to carry this out, he advises that the construction of a reservoir for the reception during the last portion of the rising and first portion of the falling tides at the point originally suggested, and within or close to the city limits, would be inexpedient, as the foul matter of the sewers would, if ejected there, be carried back to the city or deposited on the Clontarf Strand, to the serious detriment of the public health. In this opinion your city engineer entirely agrees, but as Mr. Neville was bound by his previous instructions to prepare a plan, all the works of which would be on city property, if not absolutely within the city boundary, he had of necessity to place his discharge point within that limit of his instructions, stating at the same time that it could be advantageously carried out further if the council would agree to that course. Mr. Bazalgette, after consultation with Mr. Neville, definitely recommends that the sewage be carried beyond this point, and on to the southern side of the North Bull, and that a small reservoir be constructed there, in which the sewage matter may be accumulated during the higher portion of each tide, and be discharged at the periods when the tides will be in a position, whence it will be carried out to sea without any risk or possibility of its being returned either to the river or to the strand. The general views of Mr. Bazalgette and Mr. Neville were satisfactorily shown to your committee to be the only means by which the sewage can be carried off completely, the Liffey perfectly purified, and the health of the public protected from the noxious influence produced by decomposing sewage matter. The cost of this extension, which involves amongst other matters the construction of a conduit about three miles long, would be about £70,000 to £80,000 in excess of the project for delivering the sewage into the sea at the east wall, within or close to the city boundary. Your committee are convinced that Mr. Bazalgette's is the true plan to adopt. If you approve of this plan, as thus generally stated, it will be necessary to apply to Parliament for powers to take the land, to extend the works through the county and on to the Bull, and to erect a small reservoir in that locality.

"Your committee recommend that the preliminary steps be taken to entitle you to be in a position to accomplish this, should you approve of the report of Mr. Bazalgette, explaining in detail the project we have thus indicated to you. His report will be presented in a few weeks. The surveys and levels are in course of preparation, your committee having deemed it right to order their execution at once, so as to be ready for your information before the time will arrive for taking any Parliamentary or other action."

THE HEATING OF THE DUBLIN WINTER GARDEN.

THE hot-water apparatus for heating the Dublin Winter Garden and the buildings in connection with it, is in process of erection. There will be three upright tubular boilers, of cast iron, about six feet each in height, and three and a-half feet across at base. The piping will be carried immediately under the floors of the transepts, on brick piers, in a double tier of four pipes each; over these a course of open metal grating will be fixed. Further, at intervals of twelve or fourteen feet there will be cold air chambers with registers in the floor. Into these the lower stratum of cold air will be drawn, circulate under and between the pipes, and when thus warmed be again diffused through the building. We must express an opinion as to the extension of the pipes into the concert-halls. We do not see the necessity of introducing them into either of these well arranged compartments of the building; considering the amount of heat derived from the gas-lights during performances therein, they might be dispensed with. Messrs. Weeks, of London, are the contractors.

PERPETUAL MOTION.

THERE is, perhaps, no point upon which the mechanical tyro is more likely to err than in the supposition that perpetual motion is really obtainable, and hence the readiness with which inventors almost seek the annoying disappointment attending the attempt to construct perpetual motion machines. Amongst the most recent efforts is that of Mr. Cecil L. Wellesley Reade, of H.M. 50th Regiment, who has provisionally specified as new an invention which has been twenty times patented, and nearly as many times described in the *Mining Journal*. Mr. Reade states that his invention relates to certain improvements in obtaining motive power by magnetism or gravitation, or both combined, applicable

* From "Some Points of Practice in Iron Founding," in *Practical Mechanics' Journal* for October. (London: Longmans and Co.)

to various useful purposes, including magnetic or electric clocks. He proposes to construct an iron wheel, with radial spokes, and central box or hub, which is to be set on a shaft supported by standards or bearings; on the circumference or outer periphery of this wheel he applies eight or more tangential hammers or armatures; they are attached by hinges, and are in the forms of arcs, to correspond with the periphery of the wheel. Thus, in whatever position the wheel is placed, it will follow that all the armatures above the level of a horizontal line drawn through the diameter of the wheel will be closed or concentric with the circumference, while the others will be open or in an outward or extended position, thus creating a leverage, and causing the wheel to be out of equilibrium; that side of the wheel on which the hammers or armatures are extended will be borne down, thus bringing over the successive armatures, and creating a continuous rotary motion, while the ascending armatures will fall against the opposite side of the wheel, and not exercise any counteracting leverage to the descending series. The foregoing is an example of the power of gravitation, but where he desires to aid the motion by electricity or magnetism he proposes to apply a series of electro-magnets around and outside the wheel and armatures, whereby the armatures will successively be attracted during the revolution of the wheel, and thus create a continuous motive power. By an application of clock-work movement the speed of the wheel may be easily regulated, and thus the power obtained may be made applicable to timekeepers. — *Mining Journal*.

IRISH BUILDING NEWS.

GENERAL.

The Portadown Linen Company have made extensive additions to their premises, and erected new machinery and plant.

Mr. E. H. Carson is the architect for the new additions to Grangegorman Prison. The time for receiving tenders has been extended to the 19th inst.

Mr. Joseph Faren, of Belfast, advertises in the local journals for plans for buildings to be erected between the Ulster Bank and Skipper-street, in that town. A premium of £25 is offered.

The Maze Race Committee, Co. Down, are making very necessary improvements to their stand-house on the race-course, near Lisburn.

The tender for a market-house clock for Armagh is still open.

The Holywood Pier Company, County Down, have held their annual meeting. The pier is being rapidly erected under the superintendence of Mr. Nimmo, the contractor. The coal pier, which will be of immense advantage to the town, has been commenced. A gentleman has made an offer to the company that if they run a footboard from the coal pier as far out as deep water, and put up a proper landing-stage, he is prepared to have a saloon passenger steamer built, and to place it on the line between Belfast and Holywood.

Messrs. Hunt and Sons, of Sligo, have been declared contractors for the Rachley Coastguard station.

ESTABLISHED CHURCH.

The new church at Jonesborough, Co. Armagh, built on the foundations of the old one, at the expense of Lord Clermont, from the designs of Messrs. Lanyon, Lynn and Lanyon, was reopened on the 7th instant. A new organ has been presented by Lady Clermont.

Mr. Batt, of Purdysburn, has presented an organ to the parish church of Ballyleson, Co. Down. It has been rebuilt by Mr. J. C. Combe, Belfast.

ROMAN CATHOLIC CHURCH.

A new Roman Catholic Church is to be built at Allen, Co. Kildare; Mr. J. S. Butler, architect.

St. Peter's Roman Catholic Church, Fall's-road, Belfast, was consecrated on the 14th instant. The site was given by Mr. Bernard Hughes; it is flanked on the north and south by Alexander-street, west, and Milford-street, and on the east and west by Dysart and Derby streets. The whole space, on the north side of which the building stands, will be railled in, and will eventually embrace a school, a sacristan's lodge, and other buildings connected with the edifice. The church is about 180 feet long, by about 70 in width; the style is Gothic of the 13th century, but it partakes of the continental rather than of the English developments of Christian art in those days. Externally its appearance is most effective—massive from its dimensions, yet light and graceful from the large traceried windows lighting the nave, aisles, apse and clerestory. It is built of Scrabo stone, in punched ashlar, with Scotch stone dressings. The interior

consists of nave and side aisles; the former terminates at its eastern extremity in an heptagonal apse, lighted by five triple-light windows—the latter by side chapels. At their western ends a large central porch terminates the nave, and towers the side aisles. The towers are intended to be carried up nearly 120 feet from the ground; and, as the nave roof rises about 70 feet, the building will, when finished, be a most striking object to those entering Belfast from the Ulster Railway, whilst the elevation of its site will make it prominent from every point of view. The west façade is particularly effective. A double door, with triple-columned jambs, gives access to the nave; from the capitals three orders of mouldings spring, and unite both doorways in one span, the spandril being prepared for sculpture. Above is the west window, of seven bays, with richly-decorated tracery, surmounted in its turn by a niche, and above all is a cross. In the interior the effect is very pleasing. The roof is open-timbered, stained and varnished; and in the sanctuary at the extreme end is the apse, with a groined roof prepared for decoration. The contractor is Mr. John Murphy, and the architect the Rev. J. R. McAuley, C.C., formerly a pupil of Thomas Jackson, Esq., architect.

DISSENTING.

The foundation-stone of the Ekenhead Presbyterian Church, North Queen-street, Belfast, was laid on the 9th instant, in presence of a large number of spectators. The church is to be erected at the expense of Mrs. Dummett, in memory of her brother, the late Thomas Ekenhead, Esq., of Belfast. The amount of contract is £2,200 10s., and the church to be finished by the 1st of August next.

MISCELLANEOUS.

The "SMOKER'S BONBON" is the name given by Messrs. Schooling, of London, to an agreeable compound in the shape of a confit, and is intended for those who indulge in the use of the "sublime weed," to remove from the breath the (to others) unpleasant odour of tobacco. A friend, to whom we transferred the nearly made up sample, pronounces the "bonbon" to be superior to any article he has hitherto tried for the purpose intended. We learn that the "Smoker's Bonbon" is prepared by a patent process, from a physician's recipe.

THE USES OF CORK.—These are very numerous. There is necessarily waste in cutting wine corks, which was formerly of no value; now this waste, ground very small and mixed with indiarubber, forms "kamptulicon." Ground to powder, it is used in the process of vulcanising indiarubber, which can then be moulded into the most delicate forms. Mattresses filled with fine cork cuttings will resist damp, and emigrants should take care that such form a part of their outfit. Pillows or belts stuffed with cork shavings, or cork jackets, should also be included in their list of necessaries; all these are helps in gaining a near shore in case of shipwreck. Slabs of thick cork are much used in England for standing upon in shower baths. The rough cork of the first year's gathering, which has been hitherto useless, is now converted into rustic work for gardens. The fine Spanish black, used by artists, is prepared from burning cork shavings in close vessels.

The Temple Moyle Agricultural School is to be closed at the end of the present year, being all but bankrupt. The committee reproach the landed proprietors of the north-west district of Ireland with indifference to the value and importance of the institution, and neglect of proper support. It has been five years in existence.

In the Industrial Museum, Stephen's green, the lectures commenced on the 8th inst., Geology will be treated by Mr. J. B. Jukes, M.A., F.R.I.A.; General Chemistry by W. K. Sullivan, Ph. D., M.R.I.A.; Physical Science by Wm. Barker, M.D., M.R.I.A.; Botany by G. B. Bradshaw, F.R.C.S.I.; Zoology by John Morgan, F.R.C.S.I.; and Practical Chemistry by Robert Galloway, F.C.S.

The Ulster Banking Company have held their annual meeting. During the year, two half-yearly dividends, at the rate of 12 per cent per annum, with a bonus of 3 per cent in March, and 5 per cent in September, have been paid to the shareholders, being at the rate of 20 per cent. for the whole year. The reserve fund is £110,000.

The Kilmastulla Drainage Board met on the 1st inst., at the board-room in Nenagh, Lord Dunally in the chair. Tenders for works in connection with the drainage of the Erinagh river to points M and H on the map were opened—Messrs. Brennan and Costello, £826; Messrs. Leamy, £880. The board decided in favour of Messrs. Brennan and Costello, they having executed in a satisfactory manner the various bridges and drainage works previously entrusted to them.

The Commissioners of Rathmines Township, at a special meeting held last week, took into consideration the advisability of adopting the provisions of the "Labourers' Dwellings Act, 1866," in their township. It was unanimously agreed that the sum of £5,000 should be borrowed from the Board of Public Works for the purpose.

The Dean of Down has presented an organ to the Down Philharmonic Society. It was built by Messrs. Bevington and Sons, London. The instrument contains three composition pedals for changing stops, and is enclosed in a neat Gothic case, with front speaking pipes, decorated with blue and gold.

THE HEALTH OF DUBLIN.—In the Dublin Registration District the births registered during the week ending October 6th, amounted to 146—74 boys and 72 girls. The number in the corresponding week of last year was 158. The deaths registered during the week were 234—108 males and 126 females. In the corresponding week of last year the number was 137. Eighty-one deaths from cholera were registered, being 17 less than the number registered during the previous week. Of the deaths from cholera, 19 occurred in the Kingstown District, 2 in the Blackrock District, 11 in the Donnybrook District, and the remaining 49 occurred within the Municipal Boundary. The Registrar of the Donnybrook District states that, "The poorer parts of Ball's-bridge and Donnybrook are literally full of cholera. My return for this week includes 11 deaths from cholera, and there are many more not as yet registered. The epidemic is chiefly confined to the places that are most neglected as regards sanitary arrangements. The line of the progress of the disease in the district is as follows:—It first appeared at Ringsend (from which it is now nearly eradicated), then at Beggar's Bush, Haddington-road, Ball's-bridge, and Donnybrook. There have been a great many cases sent to the Metropolitan Hospitals (the majority to Sir Patrick Dun's), most of which have made good recoveries. Nearly all the cases attended to early recovered. The poor have so great an objection to being removed to hospital that they frequently charge their friends not to let any one know of their illness; these cases are generally found by the doctors or clergy to be moribund on their arrival, having heard of them from some frightened neighbour. No efforts are being spared by the authorities to check the disease." There were only eight deaths from diarrhoea registered during the week. Fifteen deaths were caused by fever. Scarlatina proved fatal in 4 instances. A man, aged 26, died in the Cork-street Hospital of small-pox; he had not been vaccinated. Bronchitis caused 14 deaths, and pneumonia or inflammation of the lungs, 3. Fifteen deaths were ascribed to phthisis or pulmonary consumption. One accidental death was registered—that of a boy aged 8 years, whose skull was fractured by a kick of a horse. The number of deaths registered in the entire of the Dublin Registration District during the week, represents an annual ratio of 39 in every 1,000 of the population by the Census in 1861. In London the ratio was 23 in every 1,000 of the estimated number of inhabitants; in Glasgow 28; and in Edinburgh 25.

About the people of Bristol there is a quaint hereditary tendency to blunder. Brunel's bridge across the Avon, whose commencement is beyond my memory, has only recently been finished by help of the debris of Hungerford. I recollect a reservoir for a waterworks company being excavated on the very top of St. Vincent's Rocks, and filled up again because it was found there was no right to excavate. I remember hearing that the Bristolians, having to erect a county jail for Gloucestershire, built in Somerset, or vice versa. I remember seeing Prince Albert launch the Great Britain, which they had built so large that the dock walls had to be pulled down to let her out. And now I hear that my friend Mr. Godwin, one of the two or three architects living (*teste* Berekford Hope), finds his plans for Bristol Assize Courts rejected because it fulfils all the conditions. Such are the Bristolians, a heavy, resolute, blundering, unimaginative race, of whom the highest praise conveyable is to be found in this ancient formula: They are not half such fools as they look.—*Temple Bar*.

TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

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TESTIMONIALS.

From WILLIAM TITE, Esq., M.P. for Bath, and Architect of the Royal Exchange, London.

House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have used both the sorts of Cement manufactured by your firm, and that of Messrs Francis & Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good. I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant,

Messrs. White & Son.

(Signed) WILLIAM TITE.

From R. O. MINNIE, Esq., Surveyor to Board of Ordnance, London.

War Office, Pall Mall, London, S.W.,
2nd March, 1864.

GENTLEMEN,—In reply to your request, I have much pleasure in stating my favourable opinion of the quality of your Portland and other Cements, which have been extensively used in the Public Works connected with the War Department at home and abroad, especially in several of the fortifications now being erected in this country. On all occasions within my knowledge the quality has been equal to that of any other manufacturer, and has given great satisfaction.—I am, gentlemen, your obedient servant,

(Signed)

R. O. MINNIE, Surveyor.

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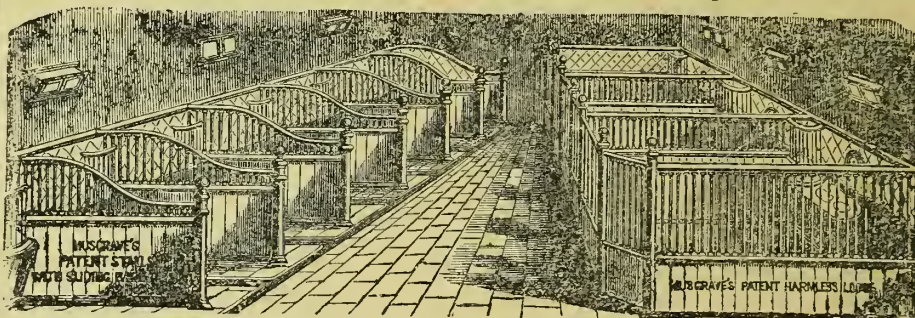
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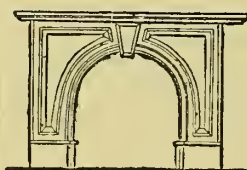
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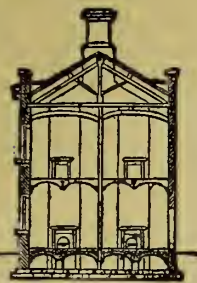
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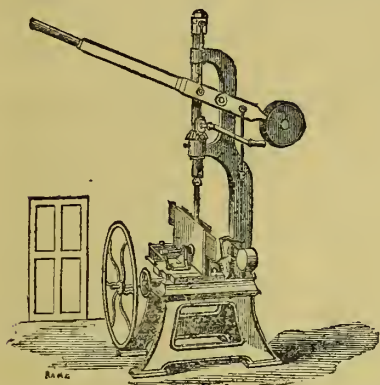
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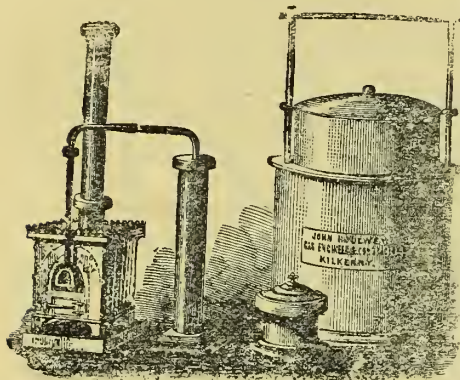
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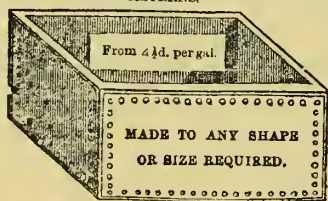
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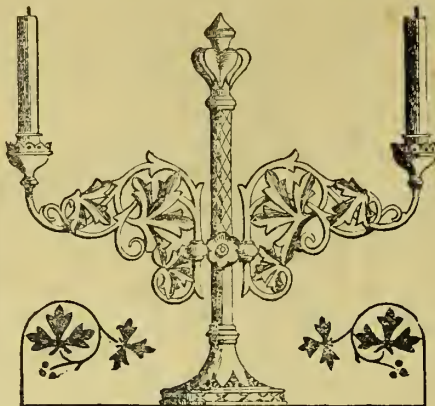
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VOL. VIII.

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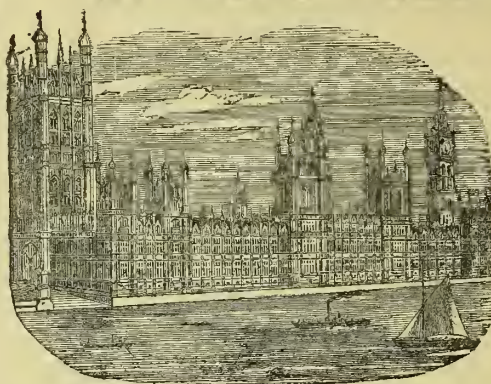
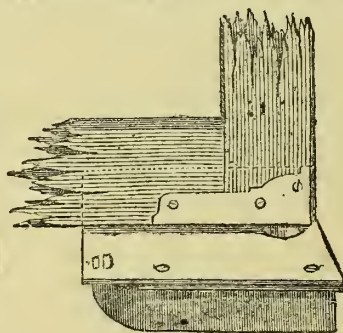
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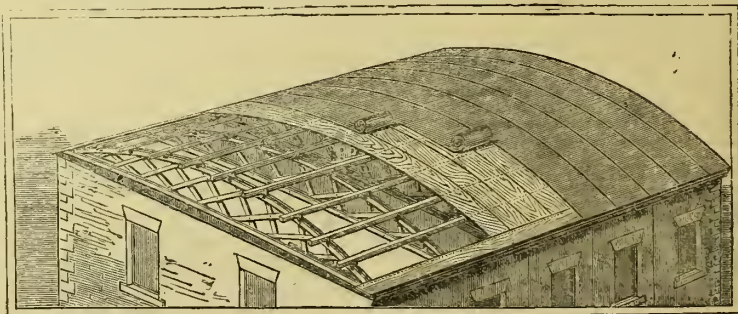
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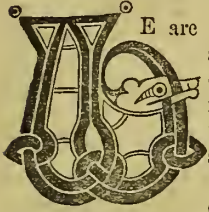
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The Dublin Builder.

VOL. VIII.—No. 165.

IMPROVEMENTS IN GALWAY.

THE COLONIAL BUILDINGS AND GALWAY ROYAL INSTITUTION.



WE are much pleased in being able to call the attention of our readers to a gratifying evidence of commercial energy and useful speculation in the ancient Capital of the West, coming, as it does, legitimately before our readers in the columns of this paper. It is also with no little satisfaction we refer to the fact that the credit of carrying out this important undertaking is due to a fellow-citizen, and the head of one of our leading commercial firms.

The subject of our notice is the Colonial Buildings in Galway (an engraving of which appears in our publication of this day), which have recently been completed, from designs by Mr. E. H. Carsou, C.E., F.R.I.A.I., and erected under the direction of Mr. Austin Semple, builder, Galway.

These elegant and substantial concerns are situate in Eglinton-street, Galway, in the most central and rising part of the city, adjoining Eyre-square, its principal front extending along Eglinton-street upwards of 100 feet, with an attractive and extensive frontage into William-street.

They comprise the Galway Royal Institution, which has been elegantly fitted up; a reading, library, committee, and lecture rooms, frequented and patronised by the leading merchants, professors of Queen's College, &c.; also the extensive first-class establishment of Mr. McNamara, wine merchant, &c.; and the premises of Mr. Gannon.

At the lower end, completing the buildings, three houses have been erected, each containing a parlour, drawing-room, four good bedrooms, kitchen, pantries, water-closet, &c., with thorough ventilation and abundance of room and light.

This property was partly erected by the late Mr. B. Killiau, of Galway, and after his death passed into the hands of Mr. William Wight, of Newenham-place, Upper Leeson-street, Dublin, who has thus completed it.

The cost of the building is about £5,000, and all the works in connection with it reflect the highest credit on every one concerned in its erection.

Mr. Wight deserves no little credit for this spirited speculation, which, whilst it adds to the beauty of the town, supplies a desideratum which must have been long felt by the inhabitants.

It, moreover, ought to act as an incentive to other capitalists to lay out in their own country a portion of their money in affording legitimate and reproductive employment, instead of sending it to promote foreign projects got up by unprincipled financial agents. We might refer to many such; and are aware that not a few of our countrymen who have engaged in these schemes, would now be glad to have contributed their money in doing some permanent good at home.

We hope that Mr. Wight will be rewarded for this outlay of his capital, the more especially as he has already given proof of his desire to assist in other projects and public institutions calculated to improve the condition of Ireland, and we think it not out of place here to call attention to the fact that he is one of the Directorate of that important and useful association, the National Land and Building Company of Ireland, in which he has a substantial interest, and where both his time and money are given to benefiting the country through its beneficial operations.

It would be well for the country if many of the provincial towns received similar aid from our mercantile classes, and that at least a portion of the extensive profits derived from them by wholesale commercial establishments in Dublin and London were to find its way back in this shape.

As regards the style and architectural elegance of these buildings, we would remark that we have always been of opinion that commercial establishments should be made quite as sightly, and display as much taste and beauty of design, and care in providing light and air as our private residences and public buildings; and we are pleased to see our views in this respect being adopted, and that the obsolete notions of conducting business in old dingy offices, in out-of-the-way streets, are beginning to give way to those more in accordance with the spirit of the age, as is evidenced by the vast improvements in this respect in our beautiful metropolis, and by the stately and palatial-looking buildings containing the offices and stores of Watt, in Manchester; the elegant offices in Water-street, Liverpool; and the buildings of the Commercial Offices Company, and others, in the East End of London.

We trust that the Colonial Buildings may form a model for others of a like character to be erected in other towns throughout Ireland, and that the worthy example set by Mr. Wight will be soon followed by many others.

Expenditure of capital in this way would give a healthy tone to commercial affairs, and an impetus to the improvement of our towns which must be of essential service to our country by giving employment to the skilled artisan and working classes. Such improvements in the architectural character of the houses of business, especially in southern and western provincial towns, is indeed much called for, and we regret that we can seldom find an opportunity for referring to anything of this kind out of Dublin except what is done in Cork, Belfast and Limerick.

We believe that such improvements are a test of material progress, evidencing an increased desire on the part of the public for better and more suitable accommodation for their wants; and the absence of such has, we have no doubt, seriously impeded the advancement of many towns; many speculative men with capital would doubtless be induced to extend their business to the provinces if they had the means ready at their hands to at once commence business. It is moreover an inducement to the residents of the surrounding district to visit towns in which they are properly accommodated with large, extensive, and roomy establishments such as they have hitherto only met with in the metropolis.

These buildings appear admirably suited for a general post office for the western district of Ireland, and are well adapted for the purposes of a savings' bank, insurance office, or other public institution, for chambers for professional men, or as offices for public companies which may be formed for utilizing the

vast inexhaustible water supply which abounds in this locality, for working its mineral wealth, its deep sea fisheries, and weaving establishments, &c., which we hope ere long to find established under the auspices of sound practical men.

CANADIAN SCENES—III.

IN the spring of '59 my old friend Doyle and myself, after the breaking up of the ice on the St. Lawrence and its tributaries, went on a visit to a French family, whose acquaintance I had made some years before in that part of the Eastern Townships which comprises the county of Brome. We travelled by railway to St. John's, Canada East.

St. John's is a dull, uninteresting village, for a French one. A lousish street with houses on each side, the principal one (as usual on this continent) being a large hotel, with a high-sounding name, as the Yamaska House, or Champlain Hotel, and the barber's sign stuck out at the basement storey, and the invariable nigger perruquier, ready to operate on your British locks.

The barracks (or "fort" if you will) are situated about half a mile further up the river. From the state of decay into which they had fallen, they are scarcely worth noticing. St. John's is within a league or two of the frontier at Rouse's Point, and on the main road direct to St. Alban's, not more than four leagues distant.

The country all round St. John's is a flat plain or prairie; the only irregularities in the landscape are caused by the hills Ben Johnson and Boncherville mountain, on towards St. Hilaire southwards.

The Stanstead Railway took us as far as Farnham—sixteen miles—in an hour. The most economic principle is here to be found in the working of this line—the principal engineer of it at times becoming engine-driver, driver *a la covenance*, while his assistant changes place for the nonce with the stoker, and the staffman becomes the "conductor."

Granby is the next station on this line, and here I witnessed an error in the laying out (or "location," in Yankee parlance) of this railway. It was simply laid out over a formidable precipice, whose slope or toe of embankment extended out for at least one hundred feet below us, entailing the expense of a retaining wall all along that part of the west branch of the Yamaska river, which might have been avoided had the engineer at that time considered it.

My friend D—e and myself stayed here for a few days, for the purpose of "taking notes," seeing and judging for ourselves. By way of episode we had an adventure here the next morning. In going out of the village for the purpose of exploring the district, we had scarcely passed the environs, when walking along leisurely, a large black bear jumped over the fence twenty yards in advance us. I thought at the moment Bruin had escaped from some menagerie, but my thoughts were not so quick as the bear's will and activity in jumping the other fence on the road side, when he galloped along quite leisurely, and entered "the bush" in a few minutes, after having frightened out of their wits Jean Baptiste and his spouse. The size of the animal may be conceived from his paws measuring from toe to extreme toe seven inches! We

measured his tracks, which were not defaced; a few minutes afterwards they were distinctly discernible, for there was a shower of rain a short time before, which made the roadway easily impressible.

This was (exaggeration apart) a very formidable customer for a native of the Emerald Isle to meet with *en promenade*; my friend seemed to be somewhat agitated,—I, with my usual *sang froid*, thought no more of the rencontre than if it were of daily occurrence.

Bruin, however, met with his death a short time afterwards, when in the act of decamping with a sheep from a farm at Abbotsford, about three miles west of Granby. The flesh was very good, and our host at the hotel, Mr. Savage, entertained us on a forequarter of Master Bruin a few days afterwards. I must confess I did not relish it, it was so rich and juicy—just like the fattest pork.

Waterloo is a nice little village, occupied mostly by settlers from the United States. Mr. Longley, heretofore a contractor under me on the Quebec and Richmond Railway, has a fine farm in the neighbourhood. He breeds the very best description of black cattle, chiefly Durhams and Devons, which frequently carry off the prize from the cattle shows at Montreal. The railway is in progress from this onwards to the province line at Stanstead. Between Waterloo and Frost village, two miles farther, there is a sheet of water, called by the Yankee descendants hercabonts, Waterloo Pond, where good sport may be had—black bass and pickerel fishing—should the angler not be annoyed by the bull pouts visiting his hooks. The bull pout (United States) is the eat-fish of Canada; it has a pair of horns on its head, and requires to be skinned before cooking. I did not like the flavour; its habits are grovelling like the eel or the sucker.

We got to the end of our journey in the evening; before leaving Frost Village met with an old assistant of mine, R. W. D—e, who had been the County Surveyor (superintendent) for Shefford; found him and Mrs. D. most happy to see me, and possessed with unbounded hospitality. D—e and myself were shortly conveyed Mr. in Dampiere's "buggy" to Shrublands; found Mr. and Mrs. Dampiere and their fair daughters, Louise, Caroline, and Madeline, and their sons Guilanme and Carlos glad to see us.

Near Shrublands is Brome Lake, which can be seen from the house; the west branch of the Yamaska River takes its rise here, and flows through the grounds of Shrublands; the entrance to the lake is about one-fourth of a mile from the house.

We made up a boating and fishing party next day, and had good sport. The lake is not famous for anything grand or romantic in its scenery. For picturesque quality it can vie with Windermere Lake in Cumberland, or Lake Belvedere, in Westmeath; it has no mountains like Killarney or Corrib to enchant the tourist, but the lands about Brome Lake are *productive*, and the scenery as diversified as the country about Canterbury, England.

On Rock Island, which seems like a castle rising out of the lake, we had our picnic *à fresco*, some of us being demi-nude, the heat was so intense, the thermometer standing at 85° (May 21st, 1859). Fishing commenced shortly, when the black bass took our baits with avidity. We landed about two dozen fine fish, averaging two to three pounds in weight.

We had an adventure in the evening on our way home. We landed at the entrance of the river with the lake to have some angling off the banks, for fish were very plentiful in this

spot. Left the basket, with whatever fragments it contained after our lunch, on the branch of a maple hard by. When I went in search of the flask which contained some *eau-de-vie* I could not approach nearer than ten or twenty yards of it on account of the offensive odour that surrounded the place where the basket was suspended. The pole cat or "skunk" (as the Yankees call that little mischievous animal) found out our provender, and thus prevented our further use of the contents. Whatever the "skunk" comes in contact with remains for days with the strong heavy sickening effluvia. We had to destroy the basket then and there!

After having partaken of a fortnight's hospitality at our friend's, Mr. Dampiere, D—e and myself took the stage for Granby, and from thence on to Rouse's Point, U.S., we then being (like Mr. Lowry Balfour, of Castle notoriety) "gentlemen at large." The United States impressed us favorably with the dash and go-ahead system of this wonderful country, being at once apparent as soon as one crosses the Ashburton line of 45°. The "free and easy" manners of the people strikes one as remarkable after leaving England, where everything is managed with such stiffness and formality!

The country that we travelled through, as far as Ogdensburg, is the oldest and longest settled part of the State of New York. It is mostly all cleared, and towns aspiring in antiquity of nomenclature with those of the eastern hemisphere. We shortly dash by a pitiable village ambitious of rivalling the capital of the celestial empire, and anon the railway whistle apprizes us of our approach to Cairo or Alexandria, and so on, one station after another bearing the most ludicrous resemblance to those historical old towns of the eastern world.

We come in sight of Ogdensburg after we pass Canton, and opposite Ogdensburg perceive the British flag waving over Fort Wellington.

The town of Prescott is close by, and bears a sorry contrast with its republican sister on the other side of the St. Lawrence.

Ogdensburg is a smart, well-built town, presenting a gay and holiday appearance, contrasting with the sombre and gloomy-looking town of Prescott, in Canada West, just opposite. It has a population of about four or five thousand, or double that of its British rival, Prescott. I met with a fellow-countryman, with whom my friend and myself stayed a fortnight or so. Cornelius Daly was an old acquaintance of my friend's, and met us with such a welcome as rarely any other nationality can bestow. This town has some fine houses and capacious shops in the square, which is flagged and well lighted with gas. The streets are all as wide as Sackville-street, having rows of chestnuts, maple, and elm trees planted on each side. The churches are mediocre.

There is a ferry between Prescott and Ogdensburg, distance about half a mile; boats ply regularly every fifteen minutes; charge, two cents. It is from this town that the several large lake steamers start for Toronto and Hamilton in the summer season, making the passage (200 miles) in about twelve or fifteen hours; usual charge, about three dollars.

I went up to Kingston and Lake Ontario in one of these boats, and in my next will have something to say of those places and "the thousand islands" of the St. Lawrence.

Dundalk, 23rd October, 1866.

KILKENNY ARCHEOLOGICAL SOCIETY.

THE October meeting was held in the Society's apartments, William-street, Kilkenny, on the 17th ult. Seventeen new members were admitted.

The Rev. J. Graves, hon. sec., laid on the table a

number of books presented to the Library, since last meeting, comprising, amongst others, publications of the Smithsonian Institution, New York; Royal Irish Academy, Dublin; Norfolk and Norwich Archaeological Society; Wiltshire Archaeological Society; Kent Archaeological Society; Royal Geological Society of Ireland, &c.

J. Carnegie, Esq., North Esk Castle, Cork, presented to the Museum a bronze celt.

Mr. W. Hilliard, Tralee, presented a modern "Tradesman's Token," struck by Josh. Helen, in Cork.

Mr. E. Kelly presented a halfpenny of James II., in good preservation.

The Rev. R. Galvin, P.P., Rathdrum, Co. Wicklow, sent a rubbing of the inscription of an old bell belonging to the Parish Church, Rathdrum, which was as follows, but in old Lombardic characters:—

† JOHES : SEXTEYN : ME : FIERI : FECIT :

The Rev. Mr. Galvin's letter further stated that, according to local tradition, this bell had originally belonged to the far-famed Abbey of Glendalough, from which it was removed to Rathdrum. He suggested that John Sexton would, perhaps, be found to have been the name of one of the bishops or abbots of Glendalough, in which case the tradition would have some strong confirmation.

The Rev. Mr. Graves said he had taken Mr. Galvin's hint, and investigated the subject as fully as was in his power, but he could not find the name given in the inscription amongst those on record as connected officially with the ancient ecclesiastical establishment of Glendalough. But, apart altogether from the tradition connecting it with Glendalough, this bell was most interesting, as the character of the letters of the inscription was so old that it would seem to prove is the oldest inscribed bell in Ireland—at least so far as it had been made known to the public; but the subject of inscriptions on bells had not been at all investigated in this country as deeply as in England, and it was well to see the society's members now beginning to take it up. He did not know of any old inscribed bells in the county of Kilkenny. It was on record that old bells belonging to Callan church, and the church of St. Mary's in the city of Kilkenny, had been melted down towards the casting of the bells of St. Canice's Cathedral in the latter portion of the seventeenth century.

Mr. Prim remarked that it was curious to find that there were two old inscribed bells in the County of Wicklow, and both, according to tradition—one of them evidently so from its inscription—brought to their present situations from a distance. He alluded, beside the Rathdrum bell, to that of the market house of Dunlavin, which had been removed thither from the Black Abbey, Kilkenny.

The Chairman referred to the tradition prevalent alike in Kilkenny and in the county of Wicklow, as to a peal of bells having been removed from the Black Abbey, Kilkenny, to Blesinton church. The present peal of bells there could not have been those referred to in the tradition, unless they were re-cast, as they were the gift of Primate Boyle.

On the motion of the Rev. J. Graves, seconded by Mr. L. Ryan, Kilkenny Model School, thanks were voted to donors and exhibitors, and the chairman announced the meeting adjourned till the first Wednesday in January.

THE NEW INSTITUTE, DERRY.

THE foundation-stone of what promises to be a fine building (judging from the drawing of the elevation which we have seen) was laid on the 25th ult. by his Excellency the Marquis of Abercorn, at Londonderry. The association for which the building is to be erected, occupied a house in Linen-hall-street, and it having been required by the Corporation for the purposes of city improvements, the committee had some difficulty in procuring a proper and central site. The Linen Hall, however, was ultimately fixed on and purchased for £800, and the new building (which will have its principal elevation to the East Wall) has been so designed as to meet the various requirements of the association in every particular. The rooms will be lofty and spacious, and well ventilated; and while nothing is lavished internally in extraneous ornament, the finish throughout will be of a neat and most substantial character. The edifice will have a frontage to the Wall of 37 feet, with a depth of 65 feet. The internal arrangements comprise a corridor, a lofty and well-lighted reading-room, committee-room, library, and two class-rooms, with a commodious and handsome lecture-room, occupying the entire front of the building on the second storey, and extending back to the depth of 42 feet. Provision has been made for heating the building with hot water. While studying economy in the erection of the new hall, the architect (Mr. J. G. Ferguson, C.E.) has succeeded in giving a handsome character to the details of the principal front, which will present a very pleasing and effective elevation, in the Ionic style. The frieze of the main corners will be enriched with medallions.

IRISH MARBLES.

THE marbles of Ireland are generally known as Kilkenny, Galway, and Killaloe marbles, but there are, in various other districts, quarries, now used only for rubble stone, which are capable of producing blocks from which slabs of large areas could be cut. Want of funds, however, and other causes, prevent the working of these quarries to their full extent. A few words first concerning the marble of Kilkenny. It is raised in a lovely valley, about half an Irish mile from the "fairie cattie," the quarry being known as the Black Quarry. There are several strata or beds of marble, each almost totally different from its adjoining layer. The black bed is of course best, and this stone is much rarer than the other kinds. We find samples of it manufactured into chimneypieces of exquisite design in London, Paris, and New York, which compare well with any others we know of. The other beds contain a great variety of impressions of madrepores, and of bivalve and of turbanate shells; the spar which occupies the place of the shells sometimes assumes a greenish yellow colour. In some places there are iridescent spots, and sometimes marl pyrites is embedded in the marble. A small specimen of pink fluor is occasionally found in some of the beds, but this is rare. There is a bed known as "Candle-drop," from the appearance of the stone when split, as if a composite candle had guttered and spattered over its surface. This kind is not generally used for mantelpieces except in bedrooms, but for ornamental work, such as inkstands, fonts, and candlesticks. Some of these are very handsome. There are other quarries in the neighbourhood which produce black marble, but from their position become expensive to work. One is called O'Flaherty's Quarry, and is situate at Sion, within half a mile of the Black Quarry, the River Nore running between, the same strata of course existing on both sides. The railway bridges on the line from Kilkenny to Waterford for miles are built of black marble from O'Flaherty's Quarry. At Tenara, on the other side of the city, is a marble quarry, but the white circles and shells predominate greatly, and prevent the manufacture of it for architectural ornament. It is only used as rubble masonry. At Bonnetsrath is also found marble of a very superior description. It is often used for monumental work, as it receives a good polish and retains it longer than any other description of marble.

Our professional readers are aware that every variety of limestone which takes a polish is called marble. The different kinds are legion, and to go into their various details would be a work of supererogation. We will therefore confine ourselves to the county of Kilkenny. Limestone is the base of the central part of the county, and of detached portions of its north-western and south-western extremities. The quality of the stone varies considerably. That to the north of Gowran, which appears good to the eye, cannot be burned into lime on account of its hardness, or of the quantity of silicious sand which it contains. Near Callan, a small village eight miles from Kilkenny, is a kind of white limestone, splitting into laminae. This last is little esteemed. Near Durrow, on the estate of Viscount Ashbrook, are found some good marble or limestone quarries, but the stone is so full of flint that the saw has almost no effect on it. The marbles of Kilkenny contain, as a rule, impressions of shells or corallines. It is stratified more horizontally than the rocks around it usually are, and appears to fill all the lower lands between the hills. No other stone lies above it, and it is generally so deep that scarcely any other has been found beneath it. In most cases the marble district is terminated by a broad bed of gravel composed chiefly of rolled calcareous pebbles. The analysis of the most common kind of marble found near Kilkenny gave 98 per cent. soluble in marine acid, and 2 per cent. in a black powder of carbon, which burned without leaving any ashes. This carboniferous limestone, though by no means of one uniform aspect or chemical composition, possesses a certain range of mineralogical characters which are not to be recognised in any other secondary calcareous deposits. In many of the quarries it is found to be nearly pure carbonate of lime, of a greyish or even very blue tint, of considerable hardness, and imperfect conchoidal fracture. This marble is of the same description usually found at Swansea, and at Abergavenny, in Wales. In small quantities it is met with in Derbyshire and Yorkshire. It is known in England better as Scar limestone than marble.

The marble works at Mill Mount are situated on the River Nore, in a romantic dell, a continuation of the valley anciently and even still called "Lough-ana-Mon," through which the high road from Kilkenny to Thomastown passes. The present proprietor, Mr. Alexander Colles, carries on the works on an extensive scale, employing not less than from 200 to 300 hands in the manufacture of monuments, mantelpieces, columns, and, in fact, every ornament required in architecture. The stone, when removed from its bed in the quarry, is dressed into huge blocks by the

hammer, and is then removed to the mills. Vertical saws driven by water power (which latter never fails) are then applied, and in a few hours the slabs of marble are fit for the stonemason. When they have been shaped by the skilful lapidary into, we will say, a chimneypiece, they are then passed to the polishing rooms, where a process called "gristing," and a second called "honing," take place. This is effected by hand, and is performed thus:—The piece of grit is kept constantly wet, and is rubbed on the marble until the surface becomes quite smooth and true to the straight edge. The "hone" is then used in a similar manner, so that by no possibility can any irregularities occur. The piece of marble is then passed to the polishing machine, which is driven by a powerful head of water, and in an hour at most the finished article is produced which will retain its brilliancy for 100 years if it get fair treatment. There are many specimens of this marble to be seen in the Jermyn-st. Museum, but we have seen much better in the paving of the streets of dear old Kilkenny. We almost forgot to mention that the Castle of Kilkenny, the residence of the noble family of Ormonde, is built entirely of marble, carved by native workmen. This beautiful edifice has been lately restored, under the direction of Mr. Deane, architect. The ancient Cathedral of St. Canice (now being restored by the same architect) is also built of black marble. This fine specimen of architecture has lasted for centuries, it having been completed by Geoffrey St. Ledger, Bishop of Ossory, in the year 1270. The marble of Kilkenny, which has withstood the ravages of time for so long a period, may be ranked first among Ireland's gems. This black marble is what may be termed the floetz limestone of Ireland, for, with the exception of the counties of Derry and Antrim in the north, and Wicklow in the east, there is no county in the island in which it does not more or less prevail. It exhibits, however, considerable variety of character in different parts, in colour, structure, and hardness. In travelling over its extended field we find it both in unmixed continuous strata and associated with rocks of various descriptions, being interstratified with hornstone, lydian stone, flinty slate, clay slate, swinstone, calp, slate clay, conglomerate, limestone-conglomerate, magnesian limestone, brown spar, trap, and porphyry. In its line of apposition to the older rocks it generally follows for a certain distance the inclination of surface which they present, but in the interior of the field may be observed a greater uniformity of arrangement.

In the northern and greater portion of Ireland, this marble strata, or, more properly limestone strata, whether we examine it by crossing the country to the south from the clay-slate hills of Longford, Cavan, Meath, and Louth, or follow in the same manner the rocky coast on the east, we find the general range to approach the east and west, and the dip towards the south. In the central counties the geological arrangement is somewhat different, the limestone there constituting basins, with strata rising and cropping out around them, and including within, distinct coal districts. But beyond the borders of these basins the dip of the limestone appears to depend as already stated, upon the position of the surface of the older rocks with which it comes in contact. Again, in the south-western quarter of the field, the prevailing dip in the interior is towards the west and south. The same rule holds good with respect to the portions contiguous to older rocks. Such is the general arrangement in the limestone or marble districts, but local variations are to be found in different parts, depending, however, partly on mere inflection. Thus, in a line drawn from the greywacke country east of Athy, in the county of Kildare, past Maryboro', in the Queen's County, to the west, the general appearance is horizontal, and the joints (as in masonry) vertical, with a slight dip towards the south. In this tract of country, at a distance of about 4 miles (Irish) from Maryboro', is the celebrated Rock of Dunamase, one of a small range of limestone hills which stretch across the northern front of the Castletown coal district, in the county of Kilkenny, and in this range some remarkable inflections are observed. On this rock stand the remains of one of the ancient castles of Ireland, and on the north side it presents a mural precipice, the strata generally inclining about 12 deg. towards the south, yet undulating in the line of direction and dip. More curious still, in the enclosure on the top of the rock, some of the strata ascend from the south under an angle of 50 deg., and suddenly become inclined towards the north under an angle of 40 deg., the inflection thus amounting to 90 deg.

The strata which dip 40 deg. towards the north are surmounted by others which dip only 20 deg. Again, the venerable remains of the ancient Cathedral of Cashel, in Tipperary, are supported by a broken marble arch, or, rather, a concentric strata of limestone. They constitute the Rock of Cashel, the subjacent arches of which are perfect and continuous; but of the superior only the flanking strata remain, which approach more and more towards the vertical

position in the interior. This beautiful place is worthy of a visit if business or pleasure take one to "darling, sweet Tipperary." The walls, columns, and arches are of marble taken from the base of the rock, and this stone not only was in great favour for building in former ages in Ireland, but was carved into fonts, and highly polished. A block of this stone was sent as a present to Rome, where it was carved into the grand font which is to be seen in the chapel of the Irish College in that city.

This building may tend to explain the occasional appearance of the vertical strata in parts of the limestone field, as, for instance, near Mountrath, on the north-eastern side, and again at Cahir and Ardinnan Bridge, in the line of the River Suir. The depth of some of the marble strata is often found to be from 200 ft. to 250 ft., if we may ground our opinion upon the elevation of the line it outcrops, the profusion of older rocks both on the borders and in the interior of the field, the levels of canals, and the different elevations ascertained by engineers employed in surveying the bogs or in laying out lines of railways, &c., throughout Ireland. In some parts of the country the marble quarries acquire a thickness of 500 feet, 600 feet, 700 feet, and even 800 feet. The summit level of the Royal Canal is 308 feet above high-water mark in Dublin Bay, and the hill of Knock Drin, near Mullingar, in the demesne of Sir Richard Levinge, Bart., is 300 feet above this level. But the surface of the limestone tract ascends considerably to the north towards Knock Ion, the Bin of Frowe, and Lough Shillin. The summit level of the Grand Canal is 264 feet above high-water mark in Dublin Bay, and the level between Monstereven and Athy is between 80 feet and 90 feet lower; and the Dunamase range of marble hills is probably in the highest part 300 feet above this level. We have said before that the colour which predominates in general is bluish-grey of various degrees of intensity, but it is often tinged with black, and passes into deep black, particularly where it is interstratified with numerous beds of slate-clay, or swinstone, or where it abounds in lydian stone. If it be not deep black very little value is set on it as a marble, and it consequently passes to the common purposes of the builder, and for metalling roads. The black marble, where it abounds in lydian stone, is a hard compact rock, often of a silicious nature, requiring much fuel for its conversion into lime, and from this cause sometimes unfit for the purpose. It may frequently be observed in Westmeath, Meath, Dublin, and Kilkenny.

The county of Galway may be considered, in a geological point of view, as divided into two great regions—the limestone or marble, and the granite regions. The high-road from Galway to Oughterard nearly marks the division, which is also discernible to the eye of an intelligent observer by the decline of the verdant hue that enlivens the former. The country north and east of this boundary line is limestone; that to the south and west, with a few exceptions, is granite. The Slievebaughta Mountains are silicious; the great group of Benabola, chiefly quartz. Poulacopple Mountain is hornblende. Between Ballynakill Bay and Ardhear is a tract of mica, slate, and quartz, interspersed with veins of primitive limestone. The same formation runs through the hills of Oughterard; it contains very beautiful serpentine and verd-antique marbles. The largest deposit of these descriptions is in the centre of the Benabola group, where it is nearly unattainable in consequence of the difficulty of conveyance. But the most valuable quarries for producing the "verd" are at Bawnanoran and Lis-souter, near the head of Birtirbuy, whence the stone for the splendid chimneypiece presented to George IV., and now in Carlton Club-house, was raised. There is another quarry at Letterlough said to be equal to the others, but not so much worked of late years. The marble known as "verd-antique" is of a deep green porphyritic substance, unique in character and appearance. The serpentine marble is green, interspersed with quartz, and, as its name denotes, presents the same hues as the serpent does when in the sunshine, and stranger still, the veins of quartz run in a zig-zag line. The appearance often presented by this serpentine stone resembles the Russian malachite. The verd-antique, in like manner, is very similar to the rare green Indian marble called "Aran-turine." There are some noble quarries at Ballinahinch, in the county of Galway, which produce "serpentine" marble in perfection. There is a specimen of this stone in the Mineralogical-room at the British Museum, presented by the late Richard Martin, M.P. There are some extensive quarries in the neighbourhood of the town of Galway, and, like Kilkenny, the principal part of the town is built of this stone. The quarries of Anglingham, Menlo, Renville, and Merlin Park are of a fine deep black, free almost from spot or stain, and highly prized in England and abroad for ornamental purposes. The marble, except that of Connemara, contains fossil remains in various quantities. That found at Oughterard is so disfigured by sections of large shells as to render it totally unfit for the manufacturer. At

Ballyleigh, near Gort, a black marble is found in large quantities; some, even better still, is found near Athery. A very beautiful grey marble is raised at Woodbrook. A singular phenomenon is observed near Ardfry, in Connemara, on the property of Mr. D'Arcy—large beds of oyster-shells may be seen many feet above high-water mark. The marble of Galway, be it black, green, grey, or serpentine, is susceptible of the highest polish; it is fine-grained, soft, and easily wrought. The foliage wrought from the pure green marble by the hand of Hogan is exquisite. The transparency of the stone in the leaf would make one fancy it was nature's, and not man's handiwork. Many years since, a Mr. Stanley opened a marble works in the town of Galway, and sent several shipments abroad.

The Merlin Park quarries were opened in 1814, by the lord of the soil, the late Sir Valentine Blake, and he also shipped a few cargoes of manufactured stone.

We find no other marble having so many varieties as the native stone of Galway. The serpentine, described before, is similar to that known to us as Egyptian marble, and is the Marmor Tiberium and Augustum of the ancients. Pliny informs us they were so called from the Emperors Augustus and Tiberius, in whose reigns they were first brought from Egypt and used in ornamental works.

We have no doubt, from actual observation, that as good marble could be produced from the Galway quarries as any that is now so frequently shipped from Alexandria. The stone is evidently the same species. Those blocks in which the variegation are waved and thrown into circular figures are called Marmor Augustum, and those whose white is not thus ranged, but diffused and scattered through the whole mass, is called Marmor Tiberium. The most eminent writers mention these marbles as "verd antique," a vague name, which they have given to all varieties of the species, as well as to green and white marbles in general. The texture of this marble is not granulated, but in different parts firm and compact. The white parts, which are pure white opaque spar, are very glittering and bright. The green marbly parts, or those greatly saturated with spar, as well as those which are of a fine jasper-like substance, are not destitute of brightness, and the micaceous parts, which lie interspersed in pretty large bundles, are very flaky or foliaceous, fair, and of a deep green colour, nearly black, and are very glossy. All these different substances are intimately mixed and interwoven amongst one and another, though not blended together, and form a most beautiful section, in fact, almost a geological map in itself.

The second variety is generally of a fine deep and light grass green ground, variously and irregularly blended together, and beautifully variegated with large clouds and spots of milk white opaque spar. Sometimes the greens are not so fine, but the slabs are coloured only with a deep and light green and olive green blended together, and in like manner variegated with white clouds and spots. This stone is capable of receiving the highest polish. This is the true "verde antico." Specimens of this stone have frequently been found in the ruins of ancient Italy, and there is a small quarry of it in the neighbourhood of Genoa now not worked. The third variety is a very elegant marble, of a greenish ground, thickly brecciated or inlaid with spaces of light green and dark green almost black, and large variegations of the white spar. The blackish green parts are quite coarse and opaque, and appear somewhat talcy and flaky, and much asbestos is often found in this kind of marble. The rest of this green kind of marble is of a moderately fine, firm, solid texture, capable of a high polish and smooth surface, is moderately heavy and hard, and will not strike fire with steel. This marble is called also "Marmor nigricans venis et onabrinis." It was also known in Italy by the name "Verde pinmino moderno." There is a stratum of this marble near Bristol, about five miles from Clifton Wells, and several strata in Wales. The grey marbles of Galway and Killaloe are of a pale grey bluish colour, but the colour is far from being uniform or plain. It is disturbed by shades of slight red and pale white; it cuts very freely, and is of a fine granulated texture, and its granules are bright and glittering. The polish it takes is far the best of all other marbles. The slabs are moderately heavy. This kind of marble is in great demand, but unfortunately the Irish quarries are mostly used by the road contractors instead of the lapidary.—*Building News.*

THE CITY "MAIN SEWER" AGAIN.

The subject of "the purification of the River Liffey" occupied the attention of our Municipal Council at a special meeting on Tuesday, the 23rd ult. The 18th (as was stated in our last) was the day on which the matter (an important one at the present time) was to have been discussed, but the majority of the citi-

zens' representatives in the Council did not attend (the topic not being, perhaps, quite "savoury" enough for them); on Tuesday, however, after a delay of an hour and a quarter, "a house" was got together, and the business of the day proceeded with. Mr. John Norwood's remarks in opening the debate embrace the entire subject, and so we give them nearly *in extenso*. He said:—

The matter at issue was one of vital importance; it should be decided on its merits, and not defeated by external influence. So far back as 1853 the condition of the Liffey excited the attention and aroused the apprehension of the citizens. They were told on the last day by Sir John Gray that many years before, in 1835, an engineer of eminence was called on to report on the state of the river, yet up to this the Liffey had remained in a state that was a reproach to the city and a menace to the health and comfort of the citizens. The question slumbered till 1864 in the Council, though it did not in the public mind, for the newspapers of the city of all shades of opinion teemed with letters from different quarters with respect to the shocking state of the Liffey, and calling for its purification. It should be borne in mind that for a number of years the drainage of the sewage of the city into the Liffey had steadily increased, changing the river from a beautiful and health-promoting stream to an object of danger, disgust, and discomfort. Sanitary committees might work and labour, but their efforts to preserve the public health were comparatively useless unless the source of the pollution was reached and dealt with. In 1853 Mr. Neville produced a report and plan for the purification of the Liffey. Since that time forty miles of fresh sewers had been constructed. More were in process of building, and everything was poured into the river. An offer was made which tended towards the formation of a company for taking up the sewage and making use of it, as the towns in England were now about to do. He thought it was better that that agreement and concession were not then concluded. If the members of the Council were as well acquainted with the advantages of intercepting the sewage as he (Mr. Norwood) was they would not hesitate in adopting a resolution which he intended to propose sanctioning an undertaking such as that which was proposed by Mr. Bazalgette, and confirmed by the city engineer. Early in the present year his lamented friend Alderman Dillon determined to take up this question, and he obtained a committee of the house for its consideration. The resolution he passed stated that there was an urgent necessity for doing something for the purification of the Liffey. Alderman Dillon immediately set to work with that earnestness of purpose which distinguished him, and being anxious that the fullest information should be given to the council he proposed to the committee to obtain the very best advice Europe could afford, and they obtained the assistance of a gentleman who was carrying out one of the greatest works that had been undertaken since the great sewers were made in ancient Rome. The public journals demanded that the purification of the Liffey should be effected. The plan of Mr. Bazalgette was a wise one, and he wanted to secure the cleansing of the river without the assistance of any company or person. There was not a city in Britain in which the damming and sluicing of the river had been adopted, and the engineer of Belfast described the disadvantages of that plan. The cure would be worse than the disease. Mr. Bazalgette had stated that this sewage must be intercepted and brought out so far to sea that no reflux of the tide would bring it back. Mr. Bazalgette suggested that, in addition to intercepting the sewage of the city, they should intercept that of Inchicore and its factories, and of Chapelizod, and the sewage of Rathmines, which flowed into the Dodder, and they should compel these townships either to keep their sewage out of the river or contribute to carry out this great work. It was but just and equitable that these townships should not be at liberty to neutralize what they were about to do. The population of Rathmines was between 12,000 and 13,000. These people contributed nothing to the city, and they contributed the sewage of that vast population to defile the river. In any bill which might go into Parliament the citizens of Rathmines, and the other outlying districts, should therefore either devise some system of their own or contribute to the expense of the proposed system. The valuation of the Pembroke Township was £57,447. What right had these towns to pollute the Liffey with their sewage unless they were prepared to pay their proportion of the cost of purifying the river? The populations of Palmerstown, of Chapelizod, of Ranelagh, of Rathmines, of Ringsend, of Sandymount, and other places in the county of Dublin, contributed to the evils the citizens of Dublin wished to get rid of. With respect to getting rid of the sewage of towns and the pollution of rivers, he candidly said that, having read a vast number of reports and a vast amount of evidence before both houses of Parliament, he believed the only effectual method of cleaning a river was to carry the sewage

right away from the towns out to sea. That was what Mr. Bazalgette proposed to do. He now came to the financial question, which was one of very great importance. Mr. Neville in 1865 computed the cost of purifying the Liffey at, in round numbers, £10,000. But the cost of Mr. Bazalgette's extension of Mr. Neville's plan was £200,000, a sum which Mr. Bazalgette assured him would fully cover the whole expense of the effectual plan proposed of purifying the Liffey. The valuation of the city was £554,892. The sewer rate of fourpence in the pound produced £8,900. Some of the most important lines of sewer had already been constructed, and consequently the pressure upon the sewer rate was now considerably lessened. He was informed that between £3,000 and £4,000 a-year of the sewer rate was now applicable to the payment of interest upon any sum borrowed for the construction of intercepting sewers, and for the drainage of the Liffey. They had then to look forward to the contributions from the different places in the county which he had mentioned—and in the next place they had an offer of the most liberal character from Messrs. Barrington and Jeffers—namely, an offer of £2,000 a year for the city sewage from the company which Barrington and Jeffers represented. That sum would cover a considerable amount of the interest on the loan needed to carry out the purification works.

Mr. Redmond said he understood the company were in the first instance to divide 10 per cent.

Mr. Norwood said that was a mistake. The £2,000 a-year was to be a first charge upon the company.

Mr. Magrath asked was it not a fact that the company were to get the sewage before they paid the money.

Mr. Norwood replied that the works were to be completed, and the sewage ready for the company, before they paid their £2,000; but were the company to be asked to pay for the article before they got it. With regard to the concession of the sewage to the company, he could assure the Council that the interests of the Corporation and the citizens would be fully protected in whatever arrangement was made. The purification of the Liffey was a step absolutely necessary for the health and comfort of the citizens, and it was now for the Council to decide whether it would at once proceed with this great work. If they determined to proceed, the last day for serving the parliamentary notices of their bill was the 12th of November, but even with the serving of the notices by that time, not a sod could be turned of the works before the spring of 1868. The Council could at any moment stop the progress of the bill. Taxation was no doubt an important matter to keep down, but the preservation of the health and lives of the citizens was beyond all considerations of a penny or two pence in the pound. He concluded by moving "That the report read be adopted, and that the law agent be directed to prepare and insert the necessary notices for going before Parliament in the next session for a bill to carry into effect the purification of the Liffey according to the plans and suggestion of Mr. Bazalgette and Mr. Neville."

After the expression of opinions by various members of the Council, the further discussion of the subject was postponed for one month.

THE ROMAN CATHOLIC CATHEDRAL, KILKENNY.

On Sunday, the 24th ult., a splendid organ, by Messrs. Bevington & Son, London, was opened in the above church, and was the means of drawing together a vast crowd of worshippers. The recently-executed decoration of the interior of the building called forth the warmest encomiums on the eminent artists to whom it was entrusted, and whose names have frequently appeared in our columns in connection with other praiseworthy specimens of art work. The following will give but a poor idea of the present appearance of this interior:—

The chancel ceiling (except that of the apse, which is azure powdered with gold) is painted a rich crimson color as a ground for elaborately designed foliage in gold and appropriate tints; the ribs of panels and bosses are highly decorated in gold and color. In the centre panel is a representation of the Holy Spirit as the Dove. The cornice is treated in rich tints and gold, setting out forcibly the mouldings, immediately beneath which is an inscription. The main walls down to the string-course are of a warm vellum tone, and the reveals of the windows are ornamented with geometric forms in color. Under the string-course are exquisitely-painted figures of our Lord and twelve Apostles, surrounded with ornamental foliage on a maroon ground, and between the Apostles are scrolls having on them the Creed. The remainder of the walls are powdered with decorated crosses and gold pateræ. The mouldings of the arches are covered with chevrons and gold fleur-de-lis; the

reveals have a geometric design upon which are gold and white monograms on red and blue grounds, with vine leaves. Under the lower windows the walls are diapered with gold monograms and parcel gilt crosses, on a rich ground of red and green. The effect of the whole is good, giving the full richness of colour without a gaudy appearance.

The Ladye Chapel is decorated so as to give a general tone of azure. The ceiling is powdered with gold stars on a blue ground, the ribs having on either side a border of white roses on a red ground. The cornice is illuminated with gold and colors. Underneath is an inscription. The walls are covered with monograms and crowns of gold and white flowers upon a light azure ground; beneath the string course, at the back of the altar, the wall is diapered with geometric designs in green and gold. On the opposite side of the cornice is an inscription from the Apocalypse. Over the recess, next the statue of the Immaculate Conception, is a scroll, in mediæval lettering, and on the opposite side is another in similar character. The reveals are richly painted with vine leaves and scrolls.

In St. Joseph's Chapel the ceiling and cornice are treated in a similar manner to those of the Ladye Chapel; the walls are of a cold grey purple tint, upon which are monograms of gold in geometric forms of blue. The back of the altar will be richly diapered; above the recesses are inscriptions. A stained glass window has been recently erected; it consists of two lights with tracery, and contains figures of the Blessed Virgin and St. Joseph. In the tracery is the emblem of the Holy Trinity. The reveals are specially designed and colored to suit, and bring out the full tone and power of the stained glass.

The entire of the decorative works have been executed by Messrs. Early and Powells, of Camden-street, Dublin.

The organ (as we have already stated) was designed and built by Messrs. Bevington and Son, London, and is complete in all its arrangements. The exterior case is of a novel and beautiful design, consisting of a centre arch and colonnade, with two smaller arches on each side, filled with pipes richly decorated in gold and colours. To give a massive effect to the instrument, two large octagon towers rise to the height of nearly 30 feet at each extremity of the case; these towers contain the great metal pipes of double diapason, 20 feet in length; the entire width of case is 25 feet. The pedal organ has four wind chests, the large sixteen feet wood pipes are within a foot from the floor, the smaller pedal pipes above the choir organ are in front, and divides the wind chests of great organ which are twelve feet apart. The swell organ is at back close under the window. There are two large double action bellows, one supplying the swell, half the pedal, and great wind chest; the other the choir organ, half the great wind chest, and pedal organ. The touch of each manual is as free as a grand pianoforte—a great desideratum in a large organ.

Towards the cost of erecting this fine instrument the munificent sum of £800 was contributed by the Right Rev. the Lord Bishop of the diocese.

ROYAL DUBLIN SOCIETY—SCHOOL OF ART.

NATIONAL MEDAL COMPETITION.

A COMPETITION for medals of the best works in drawing, painting, and modelling, executed by students of the schools of art throughout the United Kingdom takes place annually at the South Kensington Museum, the President of the Royal Academy and other academicians acting as examiners. A return of the students of the Dublin School of Art successful at the last competition has been received by the Royal Dublin Society, from which it appears that the school again takes a leading position. Since the competition of 1865 the conditions under which medal awards are made have been changed, under the regulations in force from 1857 to 1865, when a course of twenty-three stages of instruction was prescribed to school of art works (of which the maximum size was 29½ inches by 21½ inches) four selected examples were submitted by each school to the art inspectors of the department, who awarded what were termed local medals to the most meritorious of the works examined, and who selected from the works so distinguished the best in each stage for reference to the national competition. The number of local medals awarded to any one school was limited, not exceeding thirty as a whole, or three in any one of the stages of instruction. In the national competition 100 medallions were competed for by works in 19 stages of the course; four stages were excluded, being tested by a personal examination. According to the new regulations consequent on the recommendation of the Parliamentary Committee on schools of art in 1864, eighty medals only are offered to the 102 schools of art at present in operation in

the United Kingdom. The total number of works submitted in competition for those medals was 968, of which 41 were from the Dublin school, consisting of studies from the life in oil colours and modelling in clay, landscapes painted from nature, shading in chalk of the antique figure, groups painted in oil as studies of colour, flowers painted from nature, original designs for manufactures, architectural designs, &c. Seven medals were awarded as follows:—Original design for carpet, William H. Murray, national silver medal; modelling in clay for the life, Joseph Watkins, national silver medal; group painted in oil colours, Elizabeth Smith, national bronze medal; ditto, Georgina A. Birch, national bronze medal; landscape in oil from nature, Francis Walker, national bronze medal; flowers in water colours from nature, Francis Seymour, national bronze medal; anatomical study painted in sepia, Kate Seymour, national bronze medal.

In addition to the above a National or Queen's Prize has been gained by Mrs. Elizabeth Smith, for anatomical studies. Of the 102 schools of art, medal awards have been made to 31, and Dublin is the only Irish school that has been so distinguished. The following is a comparison of the medals taken by the great art schools at the recent competition:—Manchester 8, Dublin 7, Birmingham (including one gold) 4, Edinburgh 5, Glasgow (including one gold) 3, Liverpool 1, Newcastle 1.

THE "PRESS" OF TO-DAY.*

THE Press is called the fourth estate, as if the government of the country was by queen, lords, commons, and newspapers. The reporters' gallery is a regular institution of the realm. But the old law of secrecy and privacy in England remains, so that if any member simply remarks that there are strangers present the house must be cleared of all strangers then and there. In our day, a thousand newspapers and reviews give the cue to the people of the constituencies, the constituencies give the cue to the representatives, the representatives control the ministers, the ministers advise the monarch. Thus the parliament has gradually come under the influence of the Press. And now, like a fairy tale, the electric wire spells off in every town the sentences uttered by the monarch while they are yet upon his lips, and the steam-press flings abroad in thousands the opinion of the public mind upon the matter. But the greatest influence of the Press is not upon government, but on society at large, which makes the government. Books, pamphlets, magazines, who can tell the mighty power of these? And though it is a power occasionally used for bad ends, yet in the main it is immensely beneficial. It takes down the burning words of the mighty preacher, and in a few days sends them far and wide, so that beyond the walls of his church or chapel he is preaching to millions of men. A philosopher, in his midnight room, discovers a secret of nature—the Press makes it an open secret, puts every man in possession of it, and makes every man the richer by a new fact. A healing power has been discovered by a Swiss doctor—soon every physician in England and America is using it with vast advantage to his patients. A red murder has been committed—the Press goes to work in the evening, and all night it groans as it reveals the awful deed, and soon from east, west, north and south the scattered links of evidence are furnished that put fetters on the guilty man. An abuse has slowly grown up in the growth of ages till it has become a curse and public shame—individuals feel it bitterly, and bitterly denounce it. But what are individuals in a great commonwealth? A newspaper, writing of course anonymously, pronounces the thing intolerable; a pamphlet follows, indignantly calling for its abolition; a popular novelist comes next, and, with happy hits and strokes of humour, pelts the perpetrators with derision and laughter, and hurls them off the stage of society with hoots and hisses. There can be no doubt that the essays of Addison largely influenced and improved the morals of that day. Every morning for many months there was placed on the Englishman's breakfast-table a little printed leaf. This was the *Spectator*, mostly written by Joseph Addison. It was elegantly composed. It dealt with social matters. Its talents put out of use the wicked literature of Charles II. Its humour and sarcastic fun made it supremely readable; and its high moral tone rebuked the fashionable vices of the day, and constituted it a lay preacher of no small power. Some one has said—"Let me make the ballads of a nation, and I care not who makes the laws." The author of "Lillibolero" used to boast that he produced the English Revolution of 1688. The "Marseillaise" is the ballad of the French Revolution, and the "Star-spangled Banner" connects itself with the War of Independence, wherein America separated from this country. Consider the freedom

* From a Lecture by Rev. W. Osborne.

of the Press. Milton contended for it in his work, "The Liberty of Unlicensed Printing," which reads as if every word was writ with the point of a king's sceptre staff—which sounds like an ocean strand, the big words like big waves bursting in majestic music. That freedom has been won, and the Press can print anything and everything that is not essentially bad. Consider the scope of the Press. All things are taken up and handled, from the smallest job of the smallest borough town, exposed in the smallest local print, to the affairs of mighty empires, and the well-being of a whole world. Consider the cheapness of the Press. For a few shillings the learning and experience of the great and good are put into the power of the salaried clerk, and for one penny piece the working man can sit at his own hearth of an evening, and

"Let observation the extensive view
Survey—mankind from China to Peru."

For the penny paper contains all things:

"What are its tidings? Have our troops awaked,
Or do they still, as if opium drugged,
Snore to the murmurs of the Atlantic wave?
Is India free, and does she wear her plumed
And jewelled turban with a smile of peace?
Or do we grind her still? The grand debate,
The popular harangue, the tart reply,
The logic, and the wisdom and the wit,
And the loud laugh—I long to know them all;
The rest appears a wilderness of strange
But gay confusion; roses for the cheeks,
And lilies for the brows of faded age,
Teeth for the toothless, ringlets for the bald;
Heaven, earth, and ocean plundered of their sweets,
Sermons, and city fables, and favourite airs,
Aerial journeys, submarine exploits,
And Katerfelto, with his hair on end,
At his own wonders, wondering for his bread."

If for Katerfelto we substitute the Brothers Davenport, the penny paper is completely described. Consider, finally, the power of the Press, reaching so many millions, speaking to them in their own tongue, and dealing with every subject that interests them most.

AUGHNACLOY FLAX SPINNING COMPANY.

LITTLE more than a year has elapsed since a company under the above title, and on the limited liability principle, was started with a capital of £20,000, promptly subscribed by the gentry of the immediate district. The mill premises, so far, are completed, and within the past week have been opened for business. They are situate about two miles from Ballygawley, and at an equal distance from Aughnacloy, in the county of Tyrone. The first and second floors of the building contain 1,400 dry and 1,200 wet spindles for spinning and scutching tow, with the necessary preparations for each; also, a well-perfected system of rope-making machinery, and scutching handles. On the third floor is the line-preparing room, and the fourth floor is set apart for reeling, warping, &c. It is intended to add to the first and second floors 10,000 additional spindles for wet line spinning, and the works are prepared for the reception of from 400 to 500 power-looms for weaving the yarn, produced at the works. The motive power is obtained by two engines of ninety horse power each, and by a turbine wheel of ninety horse power. The boilers, engines, shafting, and gearing were supplied by the Newry Foundry Company; the turbine wheel Messrs. McAdam, Brothers, and Co., Belfast; the spinning frames and preparing machinery by Messrs. James Coombe and Co., Belfast; the rope-making machinery by Messrs. Lowry and Co., Salford, Manchester. The establishment is amply supplied with gas, the works for the manufacture of which were fitted up by Messrs. Edmundson and Co., Dublin.

There are in course of erection a number of houses for the workpeople in the employment of the company. They will be, we are informed, fitted up with all the modern improvements that can add to the health and comfort of the indwellers. The style is Elizabethan.

The entire works have been carried out from the designs and under the superintendence of Fitzgibbon Louch, Esq., C.E., F.R.I.A.I., Dublin and Londonderry.

At a meeting of the Liverpool Town Council on Tuesday, Mr. Hutchison proposed the following motion:—"That an equestrian statue in bronze of her Majesty be placed upon the platform on the east side of St. George's Hall, as a counterpoise and companion statue to that of the Prince Consort; and that the design and the execution of the work be entrusted to Mr. Thornycroft, at a cost not exceeding £5,000, to be paid out of the surplus income." After considerable discussion the council agreed to erect the statue at the cost named, but did not pledge themselves to accept the tender made by Mr. Thornycroft.

TRAMWAYS IN THE CITY.

Mr. William Forsythe, C.E., by direction of the Board of Public Works, held an investigation on the 22nd ult., in No. 2 Arbitration-room, Four Courts, concerning the merits of lines of tramways proposed to be constructed by the "Metropolitan Tramways Company."

Mr. May, Q.C., instructed by Mr. Thos. M'Govern, attended with Mr. Hopkins, engineer; and Mr. Longden, secretary, on behalf of the promoters.

Mr. Parke Neville, city engineer, and Mr. Smyth, law agent, attended for the corporation.

Mr. Hopkins explained a model of the proposed tramway, with an omnibus intended to run over it, and stated that it was proposed to lay down two lines. The first would commence near the King's-bridge Terminus, and run along the southern quays to Carlisle-bridge; thence through D'Olier-street, Great Brunswick-street, Westland-row, and Lower Merriem-street, to Merriem-square West, passing out of which it would traverse Upper Merriem-street and Merriem-row, and thence to St. Stephen's-Green. The second tramway would run through Ely-place, Hume-street, and Earlsfort-terrace, to the Exhibition Building. At some points their would be a double line of rails; but at others, in consequence of the narrowness of the streets and other circumstances, it would necessarily have to be a single line. The gauge of the rails was to be 5 feet 3 inches, being equivalent to that upon Irish railways, and better than the narrow gauge of 4 feet 8½ inches in operation in England. The carriages would be constructed to carry 54 persons each, would be drawn by two horses, would run at the rate of six miles per hour, and would be capable of stopping within their own length by means of powerful brakes.

In reply to Mr. Forsythe,

Mr. Longden stated that the sharpest curve would be an arc of 30 feet. There were five such curves on the Birkenhead Street Railway.

Mr. Hopkins said the railway would be capable of bearing waggons with heavy merchandize, but special conveyances would have to be built for the purpose.

Mr. Neville said the corporation did not offer any opposition whatever to the project, but there were four places at which it would be imperatively necessary to have but a single line of rails—viz., Usher's-quay, Usher's island, Essex-quay, and Merriem-row.

Mr. Longden said that at Merriem-row the promoters proposed to lay but a single line.

Mr. Neville observed that it would be necessary the lines should be at the sides of the streets, as otherwise they would interfere with the repairing and cleansing of the main sewers, which the Corporation were constantly obliged to be engaged in. On the quays there were no sewers at present, but there would shortly be constructed intercepting sewers, which would render it necessary to interfere with any rails that might be placed in the middle of the roadway.

Mr. M'Govern said that, of course, the promoters of the undertaking would take no step without the sanction of the corporation, and in their bill they bound themselves to that.

Mr. Neville said that under these circumstances there was no other observation which he need make on behalf of the corporation.

The inquiry then terminated.

INTERNATIONAL FISHERY EXHIBITION.

In examining carefully the various objects presented to view in the Fishery Exhibition, where every fishing implement is shown, from the simplest form of hook to the elaborate bag and drum nets with their enormous leaders, one is forcibly struck with the fact that for centuries there has been no change or improvement in the form or design of fishing engines, and that the modes of capture in use to-day all over the world are exactly those which were employed by our "rude forefathers," with probably equal adroitness and success. It is a generally prevailing opinion that what are known as Scotch weirs, stake nets, bag nets, trawls, and other such, are of comparatively recent origin, and some of these have been recently exterminated in England and Ireland as unfair modes of capture, and calculated to injure the fishery by the over-abundance of their take; but these instruments are by no means entitled to such questionable merit as is often implied by the term novelty. They were quite common in very distant times, and we find them in every variety, and others not now in general use, carefully figured and described in the old books devoted to fishery subjects. As an example, there is the "Traite General des Pesches," and "Histoire des Poissons" lesquelles fournissent tant pour la subsistance des hommes que pour plusieurs autres usages, par M. Duhamel Du Monceau, de l'Academie Royal des Sciences, de la Societe Royal de Londres," and a host of other things published at Paris in 1764, the composition of which occupied him, and a collaborateur, M. De Marre, nearly a lifetime. It is an admirable work, in three large

folio volumes, and contains a most elaborate description of all the engines, then, and for centuries previously, used in the waters known to the writer; and the diagrams furnish the exact counterparts of everything that meets the eye in this Exhibition of 1866, which is supposed to contain, and which I believe really does contain, every modern improvement, and to exhibit in a striking manner the ingenuity of this scientific and inventive age. There they are—the hooks of different bend, Kirby, Harwich, Limerick, and Norsk; the snooding; the manner of attachment; the lobster, crab, and shrimp pots; the hand-lines and spillers, with the mode of arranging the hooks for baiting; the different modes of paying out and laying the lines; the stake, hag, and fly nets, chambered, in circles, and zigzag; the seines, trawls, trammel, fly and drum nets, and oyster dredges; and viviers or well-boats—there they are in the book of the long past, and there they are without a change in the Boulogne Exhibition. Indeed, I am not sure that they did not exist in pre-historic times, and if I were a Frenchman, I might put forth the theory that they were coeval with pre-Adamite man, for I find in an antique collection of various objects, illustrative of the stone period, exhibited by M. Gabriel de Moitillet, an archaeologist of great repute, a piece of net of exactly the present statutable dimensions, 1½ inches between the knots, which was lately found between two pieces of wood embedded to a depth of six feet at the bottom of Lake Geneva, along with a number of flint arrow-heads, stone hammers (celts), and round stones with holes in the centre, such as are used at present in many countries to weight the foot ropes of the nets. If, therefore, you are ever rash enough to say that "there is nothing new under the sun," and that anybody disputes the very controvertible statement, take your stand at once amongst the fishing engines and all things connected with fish.

But some very cognoscent person may say—Is not pisciculture new, and are there no illustrations of that in the Exhibition? I admit the term "pisciculture" to be somewhat novel (although for sake of euphony I wish it was something else), but the thing which it expresses is as old as the early ages of the Celestial Empire. The theory here is, that it was discovered by one Jacobi, of Westphalia, in 1758, who, poor fellow, never lived to carry out his experiments to complete success. In 1844 it was rediscovered (as stated) by a simple fisherman of the Vosges, named Renny, who conceived the idea of producing salmon and trout by plunging the eggs of the female fish into water, artificially fecundated by the milt of the male. It was no rediscovery—the book to which I have already referred shows the whole process of artificial breeding in as perfect a state as it is at present; and the Abbe Huc testifies as to its long existence, at least as an experiment, amongst the Chinese.

As to the success of pisciculture, there is no satisfactory information in this Exhibition. There are, it is true, seven preserved specimens of young salmon said to have been artificially hatched, exhibited by a gentleman of some scientific celebrity. They are stated to be a series showing the development of salmon from the eggs to a year old:—1st eggs—the eyes in the fish; 2nd, one day old; 3rd, one month to six weeks; 4th, two to four months old; 5th, six to eight months old; 6th, eight to twelve months old; 7th, "fit to go to sea as smolts." Ah! but did they go to the sea, and, if so, did they return? Did they reproduce themselves? Did they render any waters, rivers, or streams abundant by their reappearing? In fact, although sent down in the myriads stated, have they ever shown again? In that is involved the whole question; and, with great respect for the scientific authority, his bottled specimens leave the question just as it has been—totally undetermined, or rather not yet brought within any practical knowledge. That young fish can be so produced there can be no doubt; but that the animals so raised, without the parents' selection of time and place, and without the accompaniments of active fecundation, are fitted for the hard experience of their necessary existence in the open sea, still remains to be proved; and until satisfactory proof is given of that, artificial breeding will simply rank amongst other natural curiosities unattended with beneficial results.—*Cor. Saunders.*

THE NEW TOWN HALL, CHESTER.

THE "strike" at the above building is continued pertinaciously—the stone-masons refusing to work so long as Mr. James Gargan, the clerk of works, is continued in the employ of the Corporation. The charges made against him were fully investigated by the Building Committee, who unanimously decided them to be altogether unfounded, and that he should remain in his responsible position. It will be recollected that the original contractors were Messrs. George Clark and Son, and that on the

death of the senior partner in that firm, the contract was transferred to Mr. Hughes, of Aldford. Some months since, Mr. Gargan, in the strict performance of his duty as clerk of works, complained of bad workmanship which was put in by the masons employed. This interference would not go down with the men of the trowel, and a "strike" was the result, which up to last week had continued. A correspondent informs us that "the Town Hall Committee have met and passed a resolution calling on the present contractor to proceed, otherwise they would issue an order to have the works covered up and closed for a certain period, as they were more than ever determined to resist the arbitrary conduct of the men." In a recent number of the local *Observer*, an article on this subject is concluded thus:—

"Unfortunately for those of the citizens who wish to see the Town Hall progress, Mr. Hughes has two other contracts on hand—the Trinity and Hoole churches—so that if he attempted to carry on the Town Hall with non-union men the workmen at the other places would "strike." This certainly seems to be a pretty state things, but is not so bad as it looks. Let the Council take the bull by the horns, and either build the Town Hall with ornamental brick and stone dressings, or, as the "strike" is not recognised by the union, nor receives the slightest sympathy outside Chester, call upon the contractor to proceed with the works. We have little doubt of the result."

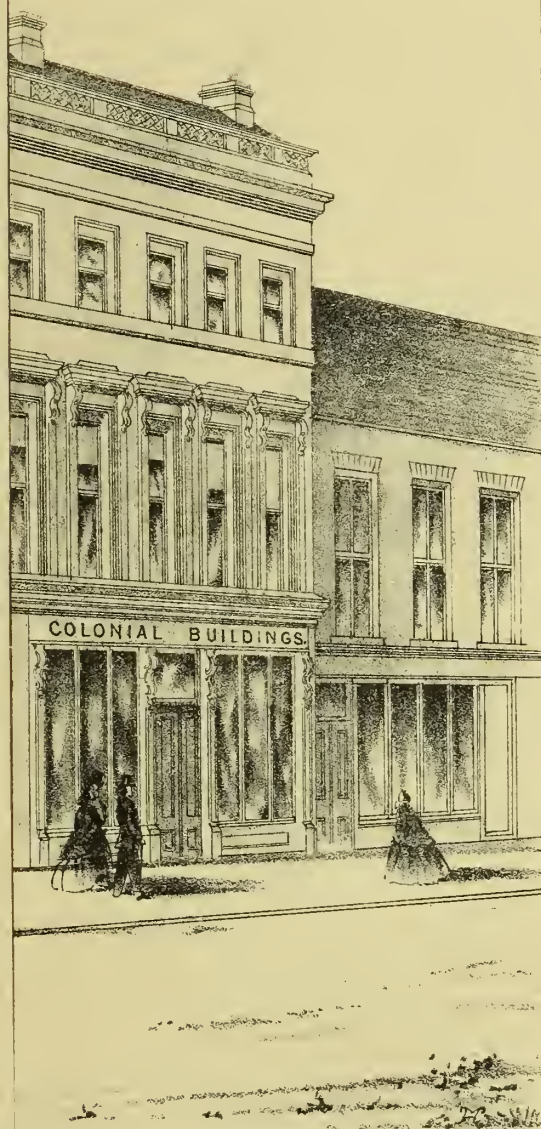
IMPROVED WATER-FILTER.

AMONGST the numerous inventions of our day is one to which our attention has been specially drawn at the present time, when the city is visited with cholera, and every effort possible should be made for the preservation of the health and lives of its inhabitants. The article to which we allude is an improved water-filter, produced by Messrs. Maguire and Son, Dawson-street, and which should be included in the household arrangements of every family. The prices fixed for these filters range from 4s. 6d. to 7s. 6d.; the purifying materials used, as analysed by Dr. Charles A. Cameron, can be had at a small cost, when required, after the quantity supplied with each filter has been rendered unfit for use, according to the printed directions. The public should test for themselves this cheap and simple invention.

THE NEEDLE LOCK AND THE NEEDLE LATCH.

A LOCK, called the "Needle Lock," has been recently patented, and it presents several points of novelty and interest. The tumbler commonly used are replaced by what the inventor terms needles, carried by a stump on the bolt. These needles must be passed through holes in a curved brass plate, towards the back end of the lock. The needles are quite separated, and, being acted upon by the key, are raised to different heights corresponding to the position of the holes in the stop plate referred to. Each needle has an independent action of its own, and all the needles must be raised simultaneously, so as to effect the process of unlocking; and, unlike levers, whose action under the pick-lock are only perpendicular, the needles move laterally, transversely, horizontally—indeed, any way; hence some of the many difficulties in attempting to pick this lock; besides there are false holes to the number of 15 or 16 entering to the depth of about one-sixteenth part of an inch into the brass plate close to the real holes through which the needles pass, which are meant as traps to catch the points of any needles attempted to be raised with the view of discovering their own holes on the well-understood tentative system. The needles are elastic in themselves, being made of the best steel thoroughly tempered, and from their position on the stumps they are rendered trebly elastic, as there is elasticity at three points. Indeed, the inventor claims this feature as constituting the strength and unpickability of this lock, because, unlike levers, which have an up and down movement, and always move to a point direct to the lever stump; the needles move obliquely, perpendicularly, laterally, or in any direction; hence the difficulty in raising all the needles simultaneously with an instrument to their required positions to run through their own apertures and avoid the many traps set for them in the shape of the holes pierced nearly half way through the fence plate of the exact size to fit the needles. In addition to the needles there are protecting and detecting arrangements, constructed on the principle that an instrument other than its own key on being put into the lock, and brought into contact with the running bolt, or even raising any one needle higher than its own hole, upsets the fence-plate, which, in being upset, lays hold of the running bolt, and thus completely obviates any further attempt to shoot the last back.

Nº 165 Nov^R 1ST 1866



Hopkins Lith. Duob.

THE COLONIAL BUILDINGS
AND
GALWAY ROYAL INSTITUTION
E. H. Carson Architect



VENTILATION.*

IN compliance with a request made some time since by the committee of the Mechanics' Institute, I have come here this evening to offer my contribution, on a small scale, towards the fund of useful information which the trades are so laudably desirous of acquiring; and I am happy to have perceived, during an observation of some years, that they are fully impressed with the conviction that "knowledge is power," and education the real respectability; and that notwithstanding the incessant toil to which their various callings oblige them, they have never lost sight of that cherished object, mental culture, and of every effort calculated to raise themselves in the social scale.

The subject I have chosen for my lecture is "Ventilation, theoretical and practical"—a subject on which public information is very deficient, and one which cannot fail to be interesting to the trades, inasmuch as its elucidation is entirely connected with mechanical contrivances, and the recent improvements in it are altogether dependent on the perfection of those contrivances. At all events, if it fail to be interesting, the failure will not be attributable to the subject, but to my own shortcomings in its treatment, for which I beg to claim your most kind indulgence.

Ventilation, as you are aware, is an arrangement, by which a constant supply of fresh air is admitted into an apartment destined for the residence of living beings, whether human or animal; and also where the foul air resulting from respiration, &c., is allowed a ready exit. But before describing the principle of ventilation and the more approved forms of it, I think it necessary, in order that you may thoroughly appreciate its importance, to give you a rough and rapid, and, I hope, not unintelligible sketch of the nature and properties of atmospheric air, and its action on the human economy during the process of respiration. In doing so, I must recollect that I am not addressing a class of professional students, who must necessarily be acquainted with the minutiae of the subject, and shall therefore avoid, as much as possible, all technical or professional phrases, which so far from being interesting, might be disagreeable and insipid to my present auditory.

PHYSIOLOGY OF RESPIRATION.

The height of the atmosphere, its weight, pressure, &c., being all foreign to my present subject, I shall pass them over, and shall only glance at its chemical properties and its connexion with the maintenance of animal life. The atmosphere is principally composed of two gases—nitrogen gas and oxygen gas—in the proportion of about four parts of the former to one of the latter. Though the nitrogen has its own extensive and important uses in other departments of the economy of nature, yet so far as animal respiration is concerned, its principal use is the dilution of the oxygen; which latter gas, though the great sustainer and supporter of animal life, would not subsist that purpose in a pure and undiluted state, and hence it is that Omnipotent wisdom has reduced it to the proper strength, by diluting it with a mild and harmless gas in the proportion of about four to one. The nitrogen gas, then being only a diluent in this case, I shall make no further allusion to it; but shall direct your attention to the other constituent of the atmosphere, oxygen, which is the great sustainer of animal respiration, without the presence of which life could not be carried on, and whose mode of action on the blood in the lungs is as follows:—The blood, as you are aware, is constantly in a state of circulation, continually being propelled from the heart to the extremities, and continually returning from the extremities back to the heart. The heart is the centre of the circulation, and is compared to a forcing-pump. It is composed of two sets of chambers, one on the right side, the other on the left—that on the left containing the purified blood,—to be sent through the arteries to all parts of the body, which on its way deposits those elements which are necessary for the nutrition of every texture, and also for their reconstruction; for they are continually undergoing waste. The other set of chambers—that on the right side of the heart, contains the blood which has returned through the veins from every part of the body—but laden with many impurities, none of which is it necessary for me to allude to, except one, and this one is the principal impurity which the venous blood contains on its return back to the heart. It is carbon, and to rid the blood of this one noxious element is the principal object of respiration, for if it were not immediately eliminated from the system, it would act as a poison, and destroy life in a very short time. Now, this happy riddance is accomplished solely through the agency of the gas of which I have just been speaking—the

oxygen contained in the air which we breathe.—The manner in which this all important result is brought about, I shall now describe.

The impure or venous blood, loaded with carbon, as I have said, is propelled from the right side of the heart into the lungs, the organs of respiration, and there it becomes subjected to the action of the oxygen contained in the atmospheric air which we breathe.—The oxygen instantly combines with the carbon. The distinctive characters of each are lost, and a new product is formed, named carbonic acid gas, which we exhale. Thus does the impure blood, which has returned through the veins back to the heart, after having circulated through every part of the body, and laden with this noxious element, carbon, become cleansed from it in the lungs, through the agency of the oxygen of the air, which converts it, as I have said, into carbonic acid gas, which is immediately expelled. Not only is the venous, or impure blood, thus altered in its qualities, but its colour is changed from a purplish hue to a bright scarlet.

This is the most concise idea I could give you, in a rough way, of the purification or aeration of the blood by respiration—a process which is continually going on from the first moment of our existence till we draw our last breath, and by means of which process the blood becomes thoroughly purified, returns by thousands of minute pure streams from the lungs to the left chambers of the heart, from which it is again propelled through the arteries to every part of the body. And this propulsion of the pure blood from the left side of the heart to the extremities, and its return in an impure state to the right side, and thence into the lungs to be purified, is called the "circulation of the blood," discovered and explained by the immortal Harvey.

Should anything interrupt this process of the circulation of the blood, or prevent the access of air to it as it enters the lungs, it would return unpurified to the left side of the heart, and be circulated in that state,—the result of which would be that death would supervene in a few minutes; for venous blood is a poison to the body, and this is the immediate cause of death in hanging or drowning—the action of the air on the impure blood returned to the lungs being prevented. Bichat showed this very decisively. He connected by a tube the jugular vein of one dog with the carotid artery (which carries purified blood to the brain) of another, and allowed the venous blood to flow into it. The immediate effect of this was, that the dog in whose brain the venous blood was made to circulate, became completely insensible, and would in a short time have died. On allowing the arterial blood, however, again to circulate in its brain, the animal was quickly restored.

Let me again draw your attention to the fact, that no sooner does the oxygen of the air come in contact with the impurity, the carbon, contained in the venous blood which has returned to the lungs, than it immediately seizes hold of it, combines with it, and flies away with it, thereby cleansing the blood of its most noxious impurity; the union of the oxygen with the carbon forming carbonic acid gas, which we exhale in breathing.

I come now to the most important part of the subject, and I beg your most particular attention to it. It is this carbonic acid gas which we exhale in breathing. The same gas is formed during the process of combustion, the oxygen of the air combining with the carbon of the fuel, in a manner very similar to that by which it is formed in the lungs during respiration. It is a most potent poison, this carbonic acid gas, and would quickly destroy life if breathed in a concentrated state for any length of time. This I shall prove to you by immersing a living mouse into a jar of pure carbonic acid gas, which I have prepared for the purpose. I have thus proved to you that carbonic acid gas is destructive to animal life when breathed, no matter whether it accumulate from respiration or combustion. And I must tell you that scarcely one of this large assembly would be alive by this time tomorrow, were the doors and windows of this Hall so completely closed that no fresh air could enter from abroad, and none of the carbonic acid gas escape from within. All the oxygen contained in the apartment would be first consumed, and as long as it remained abundant no unpleasant effects would arise, but in direct proportion to its disappearance, would the carbonic acid gas which we exhale be accumulating; the symptoms of oppression from commencing asphyxia would be increasing, and even before all the oxygen would be exhausted, death would supervene as in the case of the mouse.

A melancholy, but a most apposite illustration of what I have now been saying, is the well-known occurrence that took place in the "Black Hole" at Calcutta. In this dungeon, 18 feet square, and having only one small window on the same side to admit air, 146 men were immured. In six hours 96 of them had died from suffocation, and in the morn-

ing when the doors were opened, only 23 of the number remained alive.

I have said that carbonic acid gas results from the process of combustion, as well as from respiration; and suicide is often committed in Paris by deliberately breathing this gas. The doors and windows of an apartment are carefully closed, a pan of charcoal (which is impure carbon) is ignited on the floor, the unhappy victim retires to bed, and when suspicion justifies the forcing open of the door, he is found to have long since ceased to breathe.

I fear you consider I have been tediously minute in my physiological explanation of the process of respiration; but the fact is, we can have no correct idea of the destructiveness of defective ventilation, without understanding the *rationale* of the deleterious effects that arise from its neglect; and also the paramount importance of an unlimited supply of fresh air. This is made manifest by the constant provision which has been made by nature, in every class of animals, for bringing each portion of their blood, or their nutritive juices, in its turn, into contact with air. Even the circulation of these juices is an object of inferior importance compared with their aeration; for we find that insects which have but an imperfect and partial circulation of their blood, still require the free introduction of air into every part of their system. The necessity of air is more urgent than the demand for food; many animals being capable of subsisting for a long time without nourishment, but all speedily perishing when deprived of air.

From a calculation based on the assumption that 10½ ounces of carbon are eliminated from the lungs and skin of an adult male in 24 hours, it may be inferred that the quantity of air required to support the functions of the lungs and skin during that time (no portion of air being used more than once), falls very little short of 2,000 cubic feet; so that if a human being were shut up in a perfectly close apartment, opened only once every 24 hours, he ought to have at least that space allotted to him. On the same principle, a close bedroom occupied during a night of eight hours, ought to have nearly 700 cubic feet of air for each occupant. This space can only be safely curtailed where sufficient ventilation is practised; but the space allotted to each individual during 12 hours, whether by day or night, ought in no case to fall greatly short of 1,000 cubic feet, that is to say 10 feet in each dimension. In buildings for the reception of the sick, this quantity ought to be increased by at least one half. In apartments occupied for shorter spaces of time, 75 cubic feet per hour would be a sufficient allowance.*

When we thus see the great quantity of pure atmospheric air which a single individual requires to carry off the noxious parts of the venous blood, and to convert this into pure arterial blood, we can easily understand why such dreadful effects follow the breathing of a highly vitiated atmosphere.

THEORY OF VENTILATION.

Heat is the great agent by which ventilation is accomplished. By it the air of our dwellings is rendered pure and salubrious. You are aware that when a body is heated it becomes expanded. An iron rod which will pass through a ring with ease when cold, will not pass through it when heated to a red heat. In like manner gaseous bodies when heated undergo expansion. In this way air becomes expanded by heat. The principle of ventilation is based on this simple fact—namely, that bodies when heated undergo expansion; and air being expanded, its specific gravity becomes less; it is lighter; for if there be two given weights of air, and one of them becomes so heated that it will expand to twice the bulk of the cold air, a given volume of the former will be lighter by one half than a given volume of the latter; or, in other words, its specific gravity will be lessened in that proportion. Moreover, when a lighter gas is mingled with a heavier, the lighter will ascend, just as steam and smoke ascend. In this way the air in a heated room ascends. A vacuum, or rather a tendency to a vacuum, is created, and the surrounding cold air being heavier, is driven by atmospheric pressure to occupy the place of the heated air that had ascended. Thus the heated air is constantly ascending, and the cold air is constantly rushing in to supply its place; so that if suitable apertures be provided for the heated air to escape, and the cold air to enter, a complete circulation will be maintained, and dwelling houses so constructed must of necessity ventilate themselves. It is on this principle precisely that Nature acts on a gigantic scale for the purification of the air of this globe. We are all aware of the effect produced by the direct rays of the sun in those regions subjected to them; the atmosphere becomes rarified and ascends; a tendency to a vacuum is thereby established; the cold air from the surrounding regions rushes in to fill it up; storms and hurricanes are the results, and in this way the air

* Substance of a lecture delivered to the members of the Mechanics' Institute, Limerick, by B. Kavanagh, Esq., M.D. Published by request.

* Hooper's Physician's *Vade Mecum*.

of a whole continent becomes purified and renewed. The conflagration of a forest, and a prairie fire, by which powerful atmospheric disturbances are produced, are further exemplifications of the same principle.*

It is obvious from what has been said, that warm rooms, if provided with suitable apertures, contain a purer atmosphere than cold rooms; for in the absence of the great ventilator, heat, there is no reason to expect that its renewal should be of frequent occurrence; except indeed when the doors and windows are all thrown open.

When rooms or large buildings are crowded, even to excess, if provided with suitable apertures, the atmosphere may still be maintained of sufficient purity. The air of the apartment becomes heated from the presence of its occupants and assumes an upward tendency. The air which has passed through the lungs of those present, containing carbonic acid gas, is also heated, and, moreover, it is loaded with moisture—a circumstance which very much increases its tendency to ascend.† The cold air from without enters to supply its place, and thus the circulation is maintained.

It is very much to be wondered at, in the present advanced state of civilization and progress, that ventilation is so much neglected. In mansions of the finest design, and the most elaborate finish, it is often entirely lost sight of; and in ordinary dwellings, it does not seem to be so much as thought of, the common smoke flue of the chimney being the only means of escape for vitiated air, and noxious gases, the fresh air entering by the doors and crevices of the windows.

Now, this is a very defective, as well as a very uncomfortable mode of ventilation, as a draught of cold air is always flowing towards the fireplace to feed the fire with oxygen for the purpose of combustion; and the draught up the chimney-flue, consequent on the sudden rarification and ascent of the heated air over the fire, being the only means of carrying off the vitiated air which is ever accumulating where individuals are breathing and lights burning. Mr. Daniel has proved by experiment that this mode of ventilation is by no means to be depended on; all the vapours and noxious gases on a level with the fireplace will be carried off; but above that level, they will accumulate—moreover, the draughts of cold air, in this case, are very disagreeable, if not dangerous. This evil is increased by the almost universal fact of the door being placed opposite the fireplace, which is a very faulty mode of building. This door is often within a few feet of an outer door, and it often happens that rooms thus circumstanced are those that are most frequently occupied by the family. In this case, the current of cold air may be almost said to be unbroken; the larger the fire, the greater of course will be the draught, and those who may chance to be placed directly in it, are in more danger of catching cold, than if out under the open air on the coldest night in winter.

It is clear then that provision should be made in every room and building to be ventilated, for the admission of pure air, *without draughts*, and the discharge of vitiated air through suitable apertures, and the construction and position of these apertures, are the great secret of ventilation: to the most effectual means of producing which desirable end I shall now beg to direct your attention.

PRACTICAL VENTILATION.

It is much more easy to admit fresh than to expel foul air. It can only be done by nicely proportioning in size and number the inlets to the outlets in the apartment. A single opening will not effect it. On this subject Mr. Louch remarks:—

"In many instances the principle is overlooked in spontaneous ventilation, that where openings are provided for the escape of impure air, others must be also provided for fresh air, and *vice versa*. It must not be forgotten that air, like other fluids, will only fill a given space, or as one of our earliest writers remarks, unless openings are properly adapted to suffer air to pass freely through, the external air proves a stopper to the internal, and only mixes with the next in contact."

As a further proof of the necessity of at least two apertures, to establish a circulation, the same author says:—

"We all know that the air in a well remains stagnant and pent up; but if two wells or shafts are sunk at a given distance from each other, and a horizontal passage cut from the bottom of one to the other, so soon as the communication is made, there

will be a tendency in the air to descend one shaft and ascend the other, whenever the temperature of the external air varies from that below."

And again:—

"Take a perfectly airtight box of any size, and cut a large hole in the side of it—place your hand opposite the hole, and you will not feel any air coming out; but place a second hole of any size in the box, and immediately the air passing out is perceptible."

The double shaft in collieries and other mines is an illustration of the same principle, the fresh air descending through one, and the impure ascending through the other.

"For those reasons it is obvious that a single aperture in an apartment is not sufficient for ventilation, and that a casement window which opens like doors, is not so wholesome as a window hung in two divisions, one opening up and the other down, because in the latter two openings can be made at pleasure."

There are instances of spontaneous ventilation which will always take place when the temperature of the air within differs from that without.

In large public buildings, such as places of worship, courts of justice, theatres, ball-rooms, hospitals, school-rooms, &c., spontaneous ventilation is usually relied on, and this is all sufficient, provided suitable arrangements be adopted to carry it out. The doors and windows are usually entrusted with this duty, the former for ingress, the latter for egress, and no doubt they may be fully equal to the performance of this important task, were it not that the good effect produced will be more than counterbalanced by the continual draught of cold air that will be playing on the inmates by the simple arrangement; and I have already alluded to the dangers attending cold draughts of air indoors, an effect which is heightened when the body is in a heated condition, as is frequently the case when a public building is crowded.

Apertures for the admission of fresh air are frequently constructed on a level with the floor, but this is just as objectionable as the last mode, and for the same reasons. In Mr. Gurney's evidence before the Lords' Committee of the House of Parliament, to a question put to him.—"If he objected to the system of ventilating from the floors or sides of the room instead of the upper portion of the apartments," he stated—

"That there was a practical objection to this system, which will be seen by looking at the subject carefully. Those retrograde currents produced from entering at a low level into a room are practically very objectionable; they promote an increased rate of evaporation upon the skin, which produces a sensation of cold. Although the temperature of the air in motion may be warm, say 70 or 80 degrees, it will produce a temperature very considerably lower on evaporating surfaces. The skin of a human body is essentially an evaporating surface, and suffers much from this law. The feeling of cold in the parts of the room where those currents act, is not due to actual temperature of the currents, but to the increased rate of evaporation produced by them. Evaporation by currents rapidly absorbs heat. A person cannot get out of the currents if they enter near the floor, or at a low level; but if the openings are made near the ceilings, or at a high level, they are mixed with the atmosphere of the room above, and cease or become destroyed before they can possibly reach any one standing on the floor. There is a great objection to air for ventilation entering a room anywhere at a low level; it must necessarily impinge on the person."

As a further explanation of this effect, I will add that the feeling of cold is produced by the quantity of heat which necessarily becomes latent or absorbed, when the moisture of the body passes into the state of vapour, which heat is abstracted from the body.* Moreover by placing the apertures on a high level, we not only very much diminish the liability to direct draughts, but we also greatly facilitate the expulsion of vitiated air; for I have already shown that air when heated, from whatever cause, has a tendency to ascend. The carbonic acid gas which we exhale, though, under ordinary circumstances, heavier than atmospheric air, being thrown off from the lungs in a heated state, is rarified, and assumes an upward tendency; the cold air, on entering, being thus heavier, has a tendency to descend, and in this way the circulation is maintained; so that if the inlets and outlets be nicely proportioned in size and number, they will ventilate a crowded public building with the greatest safety and satisfaction; and on precisely the same principle as that by which the double air shaft ventilates the mine.

"As a practical illustration of the above, it is mentioned in the report of the Committee of Health of Towns Association, that a new house was erected at the Zoological Gardens in Regent's Park, to receive the monkeys. When finished, sixty monkeys were placed in it, which had already borne several winters in England; a month afterwards fifty of them were dead, and the few remaining ones were dying. The cause of this was the belief that the room would be best ventilated at the *shirting*, by apertures in it round the room; that the weight of the carbonic acid produced by the respiration of the animals, being heavier than the other air, would

* It is a principle in chemistry, when a body passes from a denser to a rarer medium (such as moisture when converted into vapour), the latter absorbs heat and renders it latent, which heat is abstracted from surrounding objects.

separate from it, and escape below. This mistaken principle of ventilation is the cause of many sad and afflicting cases of consumption, while the simple opening up and down of the sashes of the window, will render an apartment in a short time salubrious, by allowing the confined carbonic acid to dilute speedily with the oxygen of pure air."

Mr. Louch, architect, Dublin, from whose work I have already quoted, has made a suggestion with regard to the precise construction of those apertures, which deserves the most serious attention, as it is likely to prevent all the danger and inconvenience of cold draughts, and at the same time promote ventilation in the most effectual manner. He recommends a finely perforated metal plate to be secured to the inside and outside of each aperture; the interspace to be occupied by six plates of finely perforated zinc, or fly wire, placed at equal distances. This arrangement acts on the principle of the respirator, a most valuable instrument, now so much worn by persons, in this country, with whom cold air disagrees, and by means of which, in the coldest day in winter, they can breathe an atmosphere as mild and warm as an Italian climate. I shall quote his own words on this important subject:—

"Some time ago I was applied to to give an opinion as to the best mode of ventilating an hospital about to be erected. The plan I recommended was to have boxes made of strong smooth slate, neatly put together; they were to be nine inches by four and a-half inches in the clear, with the two ends open, and to be as long as the thickness of the walls would admit of; the two ends to have finely perforated metal plates secured over them; the space inside to have six divisions of perforated zinc, or fly wire, properly secured across them. I should have mentioned that the rooms were lighted with two windows at one end, and the door in the centre at the other end. I proposed placing four of these ventilators in the end, and as high up as the ceiling would admit of; that is one over each of the windows, and at the angles. I also had the upper lights of the windows made to open on pivots, placed three inches up from the meeting rails; they would open at the top in, say one foot; to have cranked iron bars secured to each frame, for the sashes when open to rest against; the space between the meeting rails would present openings of near three inches; and for the purpose of diffusing the air coming in, there should be fine perforated zinc, secured to the lower sash meeting rail, the entire width of the sash—gussets should be formed of plain zinc or wood on the sash frames, to fill the spaces at the sides formed when the upper sashes are open back on the cranked iron bars. These are to prevent the air blowing in on the inmates, when the windows are opened, which they should only be when the weather permits. I have some confidence in this plan, as while an abundant supply of pure air will be at all times admitted into an apartment, all vitiated air will be effectually removed as fast as it is generated, and draughts perfectly prevented.—Should these results be proved, the grand principle of hospital ventilation will be attained."

Mr. Louch cites many instances of barrack buildings duly provided with apertures for ventilation, and these furnished with slides to close and open at pleasure.—They are generally closed, however, as they all act as in-draughts, causing great discomfort and annoyance to the men. This evil might be obviated by the insertion of finely perforated plates of zinc as above described, which would prevent draughts, by allowing the air to enter slowly, mildly, and in a diffused manner, whilst the escape of vitiated air would not be prevented.

He also remarks:—

"In places of worship where large numbers congregate for two hours at a time, it is usual to place one or more large perforations, formed of ornamental open work, in the ceilings, to allow the carbonic acid formed by the respiration to pass into the roof above the ceiling, and from thence through louver-boarded openings into the air. Frequently the vitiated air returns from the roof, and the wind blows through the louver-boarded openings, and comes down in volumes on the heads of the congregation. To prevent this evil, I have seen large shutters so constructed by pulleys and ropes that the openings may be closed at pleasure. Now if a tube of zinc, or other airtight material with a large bell mouth (similar to a glass tube over a lamp) was placed over these openings, and brought out through the ridge, and properly capped, to prevent the wind blowing down, with the aid of the windows at each side, a safe and perfect mode of ventilation would be at all times ensured. If three of those were placed over the ceilings of our courts of justice, we should not hear any more complaints of the dreadful effects of the want of proper ventilation. School-rooms and such like should be ventilated in a similar manner."

It has been attempted on a large scale to make heated air subservient to ventilation, and in every instance it has proved a failure. In the York County Hospital a most elaborate mechanical contrivance, at an immense cost, was adopted for the purpose of forcing heated air into the different wards; provision was also made for the escape of vitiated air; and although it gave great promise of success, it has been obliged to be totally abandoned. A similar experiment, with a similar result, was made by Dr. Read in the new Houses of Parliament, so that the idea of sending warm fresh air into an apartment with the double view of heating and ventilating seems to be no longer tenable. It strikes me that the failure in these cases can be very easily explained. Air must be heated in the very place that is intended to be ventilated: this is the essence of ventilation. I have already said when air is heated it immediately becomes rarified, expands,

* "Hints on Ventilation."

† "Hints on Ventilation," by John Louch, Esq., is not for sale, but the author will with pleasure give a copy to any person applying for same. 15, Molesworth-street, Dublin.

and assumes an upward tendency, giving place to fresh cold air which undergoes a similar change, and thus a circulating current is effected; whereas heated air coming into an apartment is already as much rarified as it is likely to become there; the changes in specific gravity, just mentioned, which are so essential to the maintenance of currents, do not take place, and the air remains unchanged and stagnant.

Having said thus much on the subject of ventilation in general, I shall conclude by directing your attention to a few additional practical details, in order more fully to develop the subject.

The principal modern inventions for the purpose of practical ventilation are those of Mr. MacKinnell, of Glasgow, Doctor Chowne, and Count Rumford.

Mr. MacKinnell's plan is thus described in Prof. Nichol's "Cyclopædia of the Practical Sciences":—

"The patent ventilator consists mainly of two tubes arranged concentrically—that is, one inside the other—the inner discharging the vitiated air, while the fresh supply flows down the outer tube. It is almost automatic in its action, requiring little or no attention in ordinary circumstances. It removes the air as it is vitiated, and supplies its place with pure air, in the exact amount required, in currents so gentle as scarcely to be perceptible. The contrivance also possesses this great advantage, that it can be introduced, and acts as effectually between the ceiling and floor of the lower stories of buildings as in apartments having immediate access to the air. A portion of the inner tube, at the end towards the ceiling, is so adjusted that it slides up and down by a telescopic motion, so that when pushed up, its trumpet-shaped end closes completely or partially the aperture which admits the fresh air. The trumpet-shaped form of the inner tube, which conveys the outgoing current, deflects the currents of fresh air which are passing down through the circumferential space of the larger tube, so that the force of the descending current is broken, and made to spread out into the space to be ventilated. The trumpet expansion also serves to collect and guide the out-going currents which pass up through the central tube."

Doctor Chowne's invention is called the "Air Syphon Ventilator," the general principle of which is based on the curious and novel fact, that if a tube of the syphon shape is placed in a room, with its long end uppermost, a current of air will immediately play through it in the downward direction of the short arm, and in the upward direction of the long arm of the tube.

I now come to what may be called the *gem* of ventilation. Having given the matter a good deal of consideration, I have come to the conclusion that the most perfect, as well as the most simple mode of ventilating dwelling-houses is that recommended by Count Rumford, a description of whose plan is thus given by Dr. Haughton:—

"In the main chimney shaft an air tube should be built, adjacent to, but distinct from, the smoke flue; one end of this air tube should open near the ground, and the other just over the slates of the roof, at the foot of the chimney stack. In order to ventilate any individual room by means of this tube, two cross-tubes must be carried into it, one opening below the fireplace, and the other directly over it, at the ceiling. These cross-tubes must be provided with registers, to contract or enlarge them at pleasure, according to the temperature which it is desired to maintain in the room. When economy is an object, the fire may be supplied altogether by means of the lower one, so that the warm air of the room is not carried off at once by the fire, but gradually ascends, by the top cross tube, in consequence of its own altered specific gravity. When complete ventilation is required, the bottom register should be closed, and the top one opened, so as to supply the fire through the room itself."

I have now, I think, directed your attention to every point of interest, both theoretical and practical, connected with ventilation, and shall only further, in conclusion, beg to impress on you in general terms, the great importance of attention to it. As a medical man who has had ample opportunities of witnessing the dire effects of impure air, I can add my testimony to that of many others who have both written and spoken on the subject.

CORRESPONDENCE.

THE PURIFICATION OF THE LIFFEY.

TO THE EDITOR OF THE DUBLIN BUILDER.

SIR,—If the opinion is held by a majority of ratepayers that this river requires a remedy against the deposit of obnoxious matter mingling with the soft bed of the stream, I would suggest that flagging the bed, with an incline to the centre, or some hard substance as a substitute, would be far less expensive than intercepting sewers. Those who complain of the effluvia, I believe, admit that the portion most requiring remedy is from Carlisle Bridge to Ushers-quay; then if that part was improved by forming a hard bed to cause every matter objectionable to be carried into the middle of the river, and thence to the deep water, the outlay would be much less than otherwise. I submit that the bane arises from a soft bed, which receives and then becomes mixed and polluted with what should not remain, and that the antidote would be a hard bottom not allowing of adhesion. I believe that what is objected to arises from impure matter mingling with the bed of the river next the walls, as being the portion nearest to the discharging sewers, and also the part alone exposed, and not covered at low water. Now, if a sufficient space was flagged at the mouth of each sewer, with a fall to the middle of the stream, every impurity would be in-

stantly carried into water deep enough to carry it away. I suggest that this proposed flagging, four to eight yards wide—according to size of sewer—should be tried in one or two places, as, if such would answer and suffice, small in comparison would be the cost. The Corporation should be able to form the correct opinion as to the *modus operandi*, as, beside the opinions of eminent men, they have the advice of their own efficient and talented engineer, and frequently does good advice prevent a foolish or unwise measure. The ratepayers have to pay for one gigantic public work, and although I think and trust such will prove a success, still, for prudence sake, I submit it would be advisable to defer another of nearly equal magnitude until the proved successful result of one may induce to the other.

CHARLES SMYTH.

THE GOLDSMITH STATUE.

THE statue of Goldsmith, when compared with those by the ancient masters, possesses none of that true dignity of deportment which the sculptors of the Greeks and Romans of either the early or middle ages have thrown into all their standard works of art, such as Phidias' of the Apollon, and Minerva in the Pantheon, and Temple of Elis, or the works of Praxiteles of the Apollon. There was in that race of sculptors a flow of soul combined with beauty, and an immortality of thought which stand the criticism of time and eternity; as it was not alone the true likeness of the subject they portrayed, but there was an architectural and a classic skill and grandeur of chiselling form, and a flow of costume that will never be worn out; also one of beauty, symmetry and ecstasy of thought that refined the most refined. The models of Moses by Michael Angelo, and his Venus of Guadalupe, and Fawn and Thespian Cupid, were all but life, death, and an eternity of thought that unequalled talent and inspiration of mind could bestow.

We see in this Goldsmith's statue a refined overgrown doll, in one of those common attitudes and costumes that neither works up the soul nor gives the observer aspiration of thought; as the moment you leave its view the mind cannot rest on its beauties for an instant, as he looks as if he was intended to fill the duties of one of the subalterns of the college, by passing, through him, into the levee of that chartered home some expectant should present his card to him as an introduction to a more important position of gear and self.

Where is that sweet lyre of thought that Goldsmith threw into all his inspired works of both prose and verse, which was as sweet and as pure as the crystal stream of a dewy morning, when heaven's rays portray the magnificence of nature's thoughts, whose chiselling tool of truth has portrayed the touch of greatest greatness; as we see in him this poet's works that which is almost more than life itself, simple and sublime to both those who feel and see, as if some goddess of a future race had given him magic spell, and and an imperishable fame and name, and that to stand as long as time; not in this "gallinufely" or "modge podge" dress, which is portrayed by him; this sculptor's work, which is far short in fame and name, to place it amongst them, this poet's equals of former times, and testimonies of one of God's own sons of true and telling truth. Of he whose monument is far short of that great and sacred name of you, Oliver Goldsmith.

THOS. M'ANASPIE,

31, Brunswick-street.

ADDENDA.

If it should ever occur that this island should become depopulated, and that it should be inhabited by another race, how are they to know which of the public monuments in this city is Oliver Goldsmith's, as there is nothing embodied in it to give a stranger any idea who or what this monument is which is fully personified, in Hogan's colossal statue of O'Connell erected in the City Hall, whose commanding dignity portrays that of the orator and advocate, equally so in the equestrian statue of William III. in College Green both as a conqueror and a monarch. Also the statues of George the Third and Fourth in the old Parliament House and Dublin Society, done by Westmacott and Beams, whose attributes and costumes denote their rank and the age they were sculptured in. In the statue of Grattan, by Chantrey, you will see the inspiration of genius at work, as if he was all in life and motion advocating his country's cause, not so with the statue of Goldsmith, as it neither portrays his poetic genius in either attributes, toggery, or by device of any kind, nor does it even connect him as a graduate of the college he is placed before, and whose honors they claim as one from amongst their rank. Then monumental sculpture is a science in itself only known to a few of the very profession of that of sculptors.

T. M'A.

THE LABOURER IN FRANCE.

A CERTAIN class of persons in this country are so modest that their chief happiness seems to consist in perpetually running themselves down:—"Our

neighbours are far better than we are"—"They do those things much better in France," or Germany, as the case may be—"We travelled all day about the city, and saw no one intoxicated; would we could say the same of London or Glasgow." Such is the tone of the unmitigated nonsense flowing like milk and water from the pens of these public instructors (?) whose day has been a long one, because, with a fettered press on the Continent, it has not been possible until very recently to give these "instructors" the lie as emphatically as could be wished, and in the manner possible only to those thoroughly acquainted with the condition of things on the Continent.

M. Jules Simon has published a book, called "Le Travail," and in its pages he eloquently discusses and describes the present condition of the working classes in France. A translation into English of this work would dispel many existing illusions, and we hope, for the sake of truth and fairness, that a cheap edition may find its way into a ready market. Contrary to general opinion on this side of the Channel, it appears that, most unhappily, habits of intoxication are very prevalent amongst French workmen, and that in some French towns the women are as bad as the men. We have known them go gambling with their husbands till four and five in the morning, "turning out" only when the light of the sun paled the lamp's ineffectual glare. The cause of much of the drunkenness, in M. Simon's opinion, is to be traced to the absence of domestic comfort in the homes of the poor, who, as with our labourers at home here, are driven into the warmth and cosiness (?) of the *cabaret*, where they can "liquor up," get warm at "M'sieu Adolphe's" expense (?) and forget for awhile, in really intensifying their own wretchedness, that which they have left outside, or fancy they have left.

But that must be a dense cloud indeed through which the sun will not shine—minute wretchedness indeed which philanthropy will not reach. Accordingly, we find that various associations have been recently formed for improving the habitations of the poor, and thus also their character and condition. M. Jules Simon from among them all selects for approval the pretty well known Mulhouse Association. Formed in 1853, with a capital of 300,000*fr.*, in 60 shares of 5,000*fr.* each, the Association has built 700 houses, containing now a population of 5,000. The houses are of various kinds. Some have one storey, others but a ground floor; but all are built with special attention to health, decency, and comfort.

It is not demanded of a working couple that they have no children when they take possession, or that they sign a bond not to have any so long as they occupy premises at Mulhouse, as is the case in this most civilized of cities. They are ahead of us in this at least in the model town; and we make our milk-and-water deprecators a present of the fact. Again, each house, with its garden, covers 160 square metres, and the occupier, a working man, is the proprietor. The Association, it may as well be here noted, sells its houses at cost price!

On entering into possession, the workman pays down some twelve guineas, which is kept in reserve for expenses of contract, &c.; and this is followed by monthly payments of from 18*fr.* to 25*fr.*, according to the kind of house he has selected. Should the house cost 3,000*fr.*, the whole amount is paid off in thirteen years. Now, as the man would have to pay for queer lodgings, for the same term, 1,700*fr.*, the actual cost of the house to him is 1,300*fr.* spread over thirteen years, or 100*fr.* a year! It appears that by the end of last August 614 out of the 700 houses had been sold, 112 entirely paid off, and a large number of the others but slightly encumbered.

What the moral influence of a number of such associations would be on any large town, who would dare anticipate? Our working men are so much in love with philanthropists that they would look on any "gifts" with, in the majority of cases, simple contempt. They find that philanthropy in most cases looks out for its five per cent.; but they would jump at such things as railway colonies, and to railway companies we recommend the idea.—*English Mechanic.*

L A W.

COURT OF CHANCERY—IN CHAMBER.

Johnstone and Others v. Colville and Others.—Application for an injunction to restrain respondents from raising the level of the city weir at their mills on the Dodder near Templeogue. Petitioners and respondents are millowners, the mill of respondents being higher up on the river than that of petitioners. For petitioners it was alleged that the work which was being executed by respondents on the weir in question would prevent the water from flowing down to their mill. On the other hand it was contended by respondents that the water which

came over the weir to petitioners' mill was almost infinitesimal in quantity, and that they were only raising the level of the weir, which had been worn away in the lapse of time by the action of the water, to less than its original height.

The Lord Chancellor said that, considering the irreparable injury that would be done by granting the injunction at the present time, he would refuse the application; without prejudice, however, to its being renewed at a future time on further affidavits, the works to be carried on by respondents at their peril. Question of costs reserved.

IRISH BUILDING NEWS.

An inaugural social meeting was held on the 25th ult. in the new buildings recently completed by the Church of England Young Men's Society, at Clarence-place, Belfast. It will be recollected that the foundation-stone was laid by J. Mulholland, Esq., J.P., D.L., Craigavad, on October 27, 1865. The plans were by Messrs. Lanyon, Lynn, and Lanyon, and the order of the architecture is Italian-Gothic. The frontage is 120 feet. The principal apartment is a beautifully-constructed hall, which is situated on the second storey; it is 10 feet long by 40 wide, and is furnished with a gallery. There are, besides, excellent clerical rooms, a library, a coffee-room, offices, and servants' apartments. The building is compact and well arranged. The builders were Messrs. Fitzpatrick, Brothers.

A new chapel is to be built at the Convent, Skibbereen, for the Sisters of Mercy. The present chapel is to be transformed into a lateral choir, and is to be separated from the chapel by an arcade, having iron screens, &c. A cloister leads from the choir to the stair to organ gallery, which is situated over the west entrance to the chapel. The internal dimensions are about 70 by 25 feet. The architects were Messrs. Pugin and Ashlin, of Dublin.

The committee of the "Edmund Burke" Statue are still in want of funds to pay for the figure, which is in a forward state.

The works at the Shelbourne Hotel, St. Stephens'-green, are being rapidly pushed on by the contractor, Mr. S. Bolton. It is expected that its opening will take place early in January of coming year.

Mr. Foley, R.A., has consented to furnish a complete design for the "O'Connell Monument." He honored the Committee with his presence at one of their recent private meetings.

The Bray Town Commissioners have adopted the plans prepared by Mr. Brett, C.E., for the sewerage within the township, and the works are to be executed without further delay. The estimated sum, to be borrowed from the Board of Public Works, is £10,000, which it is calculated will defray cost of watering, and the new sewerage, paving, &c.

MISCELLANEOUS.

The Admiralty have accepted the tender of the firm of George Smith and Co. for the extension of the Portsmouth Dockyard. This contract, under the provisions of an Act of Parliament, involves an expenditure of upwards of a million in the next four years.

A monument has been erected to the late Herr Ott, who was killed a few months ago by Count Eulenburg, at Bonn. It is 10 feet high, and bears the following inscription:—"D. Eugene Ott lies in this place, which was prepared for him unexpectedly. He died innocent."

Among the local Acts of Parliament recently printed is one to wind up the affairs of the Thames Tunnel, which was commenced under an Act of George IV. The East London Railway having purchased the property, the debts—which are small, will be paid, and the surplus distributed among the shareholders.

PRINTERS' MISTAKES.—*L'International* gives the following instances of printers' mistakes:—"During the Mexican war a general and thirty-seven of his men lost their lives in a bottle (bottle.) A man was charged at the Marylebone Police Court with stealing an ox (box), which on searching him, was found in his pocket. Two widows (windows) were advertised as "to let" on the day of the entry of the Princess of Wales into London.

Some curious discoveries have been made by Prof. Unger, who has been examining certain bricks from the Pyramid of Dashour (3400 B.C.). The bricks, which must have been made of the Nile mud or slime of the period, have been found to contain many vegetable and animal remains. By this discovery Professor Unger makes us acquainted with wild

and cultivated plants which were growing in the pyramid building days; with freshwater shells, fishes, remains of insects, and so forth, and a swarm of organic bodies, which, for the most part, are represented without alteration in Egypt at the present time. Besides two sorts of grain—wheat and barley—he found the field-pea and the common flax, the latter having, in all probability, been cultivated as an article of food as well as for spinning. The weeds are of the familiar kinds:—wild radish, corn, chrysanthemum, wartwort, nettle-leaved goosefoot, bearded hare's-ear, and the common vetch. The relics of manufacturing art consists of fragments of burnt tiles, of pottery, and a small piece of twine, spun of flax and sheep's wool, significant of the advance which civilisation had made more than five thousand years ago. The presence of the chopped straw confirms the account of brickmaking as given in Exodus and Herodotus.

A TRAVELLING PRINTER.—Printers beat the Dutch, and every body else, but their wives. We have one in our office who preached the Gospel, ran a side show to a circus, kept a singing-school, ran away with a man's wife and two children, practised medicine, has been an agent for a concert troupe, and clerk on a steamboat. He has now reformed, and settled down to a legitimate business—that of sticking type. We'll make a man of him yet.—*American Paper.*

The Castle Hotel at Aberystwith, in South Wales, is, perhaps, the most magnificent illustration of the building mania that has yet been called into existence by the spirit of speculation. The building, which is eight stories high, and is constructed in the Mediaeval style of architecture, contains 500 rooms, and, although £225,000 have already been expended upon it, a further sum of £75,000 will be required to make it habitable, and £50,000 for furniture. It was built by Mr. Savin, the railway contractor, whose estate is now under inspection, and a wing of it was open last summer for the reception of visitors. It is built quite on the edge of the sea, and it is necessary to go out in a boat to get a view of the marine front! The porch, made of cut stone, cost £1,000, and all the outbuildings and offices are on the same magnificent scale. The building, or carcass rather, is to be offered for sale by auction next month, and the probability is that it will not realise half the cost of the materials.

The Manchester Exchange Competition has been decided by the award of the first and second prizes, 500 guineas and 200 guineas, to the designs of Messrs. Mills and Murgatroyd, architects, of Manchester (No. 11, distinguished by the motto, "*Qui serit metit*," No. 15, with the motto, "*Semper fidelis*"), and the third, 100 guineas, to that of Mr. Lowe, also of this city (No. 13, "*Mens conscia recti*"). Messrs. Mills and Murgatroyd have been long the architects of the Exchange committee, and many thought in the first instance that they should have received the commission without competition. All the selected designs may be described broadly as Italian. No. 11 has an advanced portico towards Cross-street, coming up to the boundary of the land, on either side of which are flights of steps, filling up the space between the boundary-line and the face of the flanks of the building, which are terminated by a tower at each angle, one having a clock, the other a wind-dial. The other fronts generally carry out the ideas of the main front: those to Bank-street and Market-street have the main walls forming the side of the large room thrown back for a portion of their length, forming open-air balconies, for the use of the subscribers, on the roofs of the shops below. The main room itself occupies, with the exception of one or two offices, nearly the whole area of the site, and by this arrangement of space, not only is a great area secured for the use of the subscribers, but it has windows on all sides, looking into the four streets surrounding the site. The ceiling is supported without intermediate supports across a clear area of 120 ft. in span; in the report attached to the drawing, it is asserted to be the largest room in the world roofed over in one span. In addition to conversation-recesses, pay-desks, lavatories, and cloak-rooms, and the open-air balconies, there is a reading-gallery provided. The alternative design under this motto shows a central tower over the portico, and an arrangement of plan different from the other, inasmuch as the span of the roof is lessened, to allow of offices being constructed over each side of the room. There are fifty-three sets of drawings, several of them of much merit; but it is surprising how many competitors have ignored the fact that one part of the building has to be erected and occupied before a street can be absorbed, and the old building pulled down and the site added. Thus the class of designs with a central dome, or nave and transepts, could not be executed because the land is not at present available on which to build half of the supports. We have already received several letters complaining of the result of the competition. The mistake appears to have been, going to competition at all.—*Builder.*

We have noticed, on several occasions during this autumn, short paragraphs in the English newspapers, referring to the Ploughing Matches now being held in all parts of the kingdom. These meetings are, in reality, *plough trials*; for, although the prizes are offered to the best ploughman, a good plough is indispensable in order to win them. Most of the ploughing societies offer a champion prize, open to All-England, and thus invite the attendance of first-class men from the principal ploughmaking firms; these men not only add to the interest of the matches, but, by exhibiting the high standard of work produced by their ploughs, recommend them to the notice of the farmer, and set an example to be imitated by the farm labourer. Since the last great plough trials conducted by the Royal Agricultural Society of England in 1864, Messrs. Ransomes and Sims, of Ipswich (who then took four out of six first prizes), have been the most successful competitors at these matches, their ploughs having been awarded the unprecedented number of seventy All-England prizes, besides a long list of special awards, silver cups, &c. We shall occasionally report the results of future matches, for the benefit of our farming friends.

The very extensive and valuable bequest by the late Mr. Henry Christie to the British Museum of all his collections of ethnographical and artistic objects will soon be available. The collection is peculiarly rich in the early remains from the drift, antiquities discovered in the caves of the south of France, La Madeline, Monsteir, Pressigny-le-Grand, stone implements and weapons from all parts of the world, Mexican antiquities and other remains of an ethnological character. Mr. Christie's trustees presented to the British Museum the following treasures of antiquity:—A painted vase of the kind called *Kernos*, from the island of Melos; thirty-two painted fictile vases and two terra-cotta figures from Camirus; four Greek painted vases, two terra-cotta *pyxides*; two objects in bronze; a string of amber beads and some carvings in the same material; a number of fragments of inlaid glass; seven objects in bone and ivory; eight antique rings; and seven engraved stones.—*Athenæum.*

THE GREAT AND SMALL SAVINGS OF MACHINERY.—The saving of labour by machinery can be appreciated not only by the skilled artisan and manufacturer, but by persons having no mechanical knowledge, when it entirely revolutionizes an art or trade, and enables articles to be made by the hundred in the time occupied, before its introduction, in the manufacture of a single one; or provides for the performance of as much work of any kind in an hour as required a day by hand. Every one who has seen or read or heard of the manufacture of steel pens, buttons, pins, nails, spikes, and shoe-pegs by machinery, or watched the operation of a sewing machine, can understand their immense economy of time or labour; and it is not difficult to appreciate the importance of a machine that will hock and shape 1,400 hats per day. There are, however, many small savings of labour effected by machinery which are not so apparent to persons outside of the trades or arts to which they relate. It can hardly be understood that an improvement in the sewing-machine which would save five cents per dozen in the sewing in of hat-linings would be of any considerable importance or would pay the expense of a patent; but when it is stated that there are hat factories in which several hundred thousand hats are made in a year, it may be ascertained that such an improvement will effect a saving of thousands of dollars annually to a single concern. It may also be wondered how a saving of a fraction of a cent on each in the manufacture of very large tin cans would be worth patenting, but when it is known that a single concern manufactures several thousands of such cans daily, and that the use of a machine making such a saving on each can reduce the working expenses of the factory twenty dollars a day, the wonder ceases. It is in the immense number of articles made by a machine that the smallest saving becomes valuable.—*American Artizan.*

TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

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House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have used both the sorts of Cement manufactured by your firm, and that of Messrs. Francis & Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good. I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant,
Messrs. White & Son.

(Signed) WILLIAM TITE.

From R.O. MINNIE, Esq., Surveyor to Board of Ordnance, London.

War Office, Pall Mall, London, S.W.,
3rd March, 1864.

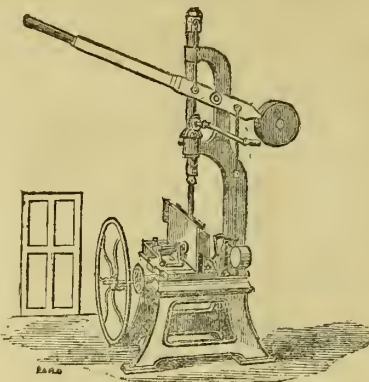
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(Signed) R. O. MINNIE, Surveyor.

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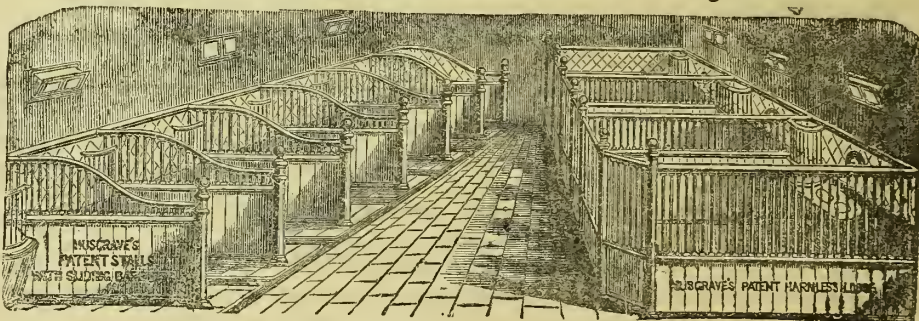
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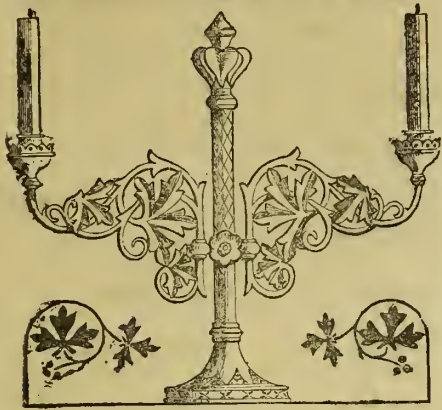
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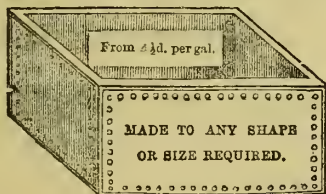
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Improved WEIGH BRIDGES, with relieving Levers;
WEIGHING MACHINES of every description.
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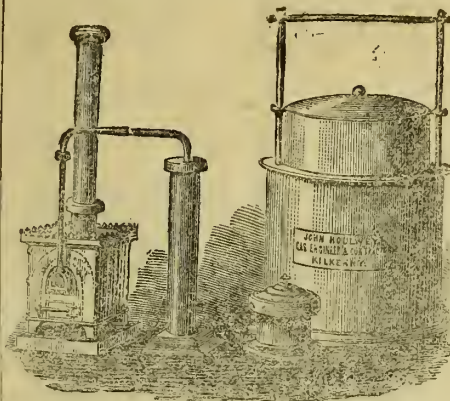
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SMALL PORTABLE OR FIXED GAS
WORKS for Villas, Mansions, Railway Stations, Farm Steadings, &c., or any Establishment where from 20 to 50 or more lights are required. These small works are both simple, cheap, and effective; can be worked by any ordinary laborer, and will produce Gas from Coal, Canals, or Peat at a small cost. Larger sizes for Villages, Towns, and Cities.

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CONTENTS:—Formulae useful in designing Builders' Work.—Tables of the Weights of Materials used in Building.—Memoranda connected with Builders' Work.—Architectural Mensuration.—Constants of Labour.—Valuation of Property.—Summary of the Practice in Dilapidations.—Scale of Professional Charges for Architects and Surveyors, with various useful Tables and Memoranda.

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The School will re-open on MONDAY, 1st October, 1866, for instruction in Elementary and advanced Drawing, Figure and Landscape Painting in Oils and Water Colours, and in Architectural and Mechanical Drawing.

Classes for Artizans—Females from 10 to 12 o'clock, a.m., on Tuesdays and Thursdays. Males, from 7 to 9 p.m., on Mondays, Wednesdays, and Fridays.

Fees—Females: 1s. 6d. per month; 7s. per session of five months. Males: 2s. to 5s. per month; 9s. to 12s. 6d. per session of five months.

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A Prospectus, setting forth in detail the Fees and Hours of Instruction, will be shortly issued.

The Works executed in competition for the prizes offered by the Society, must be sent in on or before the 15th December, 1866.

The Exhibitions of the Works executed for the Taylor Prizes and Scholarships will be held in the month of November, 1866. Works intended for this Exhibition to be sent in on or before Saturday, 10th November, 1866.

Competitors for the Taylor Art Prizes are to apply, according to a form to be had on application at the Society's House.

WM. EDWARD STEELE, M.D.,
Assistant Secretary.

Kildare-street, September, 1866.

**GUEST AND CHRIMES,
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Mr. J. B. GILPIN, 53, WILLIAM-ST.

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GUEST & CHRIMES, in calling public attention to the above Advertisement, wish to say that samples of the various Articles manufactured by them may be seen at their
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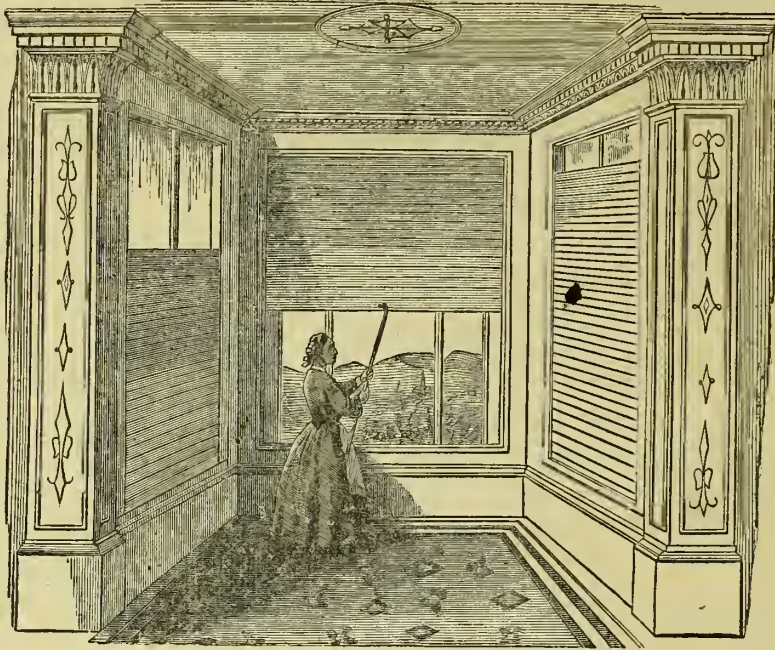
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SHUTTER,
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BEG to call attention to their extensive, varied, and well-selected Stock of Ironmongery in all its different branches. It consists of Parlour, Drawing-room, and Bed-room Grates; Kitchen Ranges, Sash Weights; Iron Rim, Mortise, and Stock Locks; Hinges of all descriptions; Wrought and Cut Nails, O. G. Gutters, Down Pipes and Fittings, Metal Skylights, Ventilating Bricks; Cast-iron Chimney-pieces, with and without Grates; Rabbit Traps, Fox Traps, Galvanized Wire Netting, Sheet and Perforated Zinc, Sink Traps, Furnace Doors and Frames, Hot Air and Plain Stoves, Cast-steel Digging and Manure Forks, Slashing Hooks, Rakes, Spades, Shovels and Hoes.

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Beg to inform parties requiring the above, that they have erected EXTENSIVE MANUFACTORY for facilitating the execution of STAINED GLASS, and are now prepared to furnish all descriptions of Work fully 30 per Cent. lower than any other House in Dublin, also of superior Designs and Finish, and respectfully invite an inspection of their Patterns.

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The Dublin Builder.

ILLUSTRATED RECORD OF ART, SCIENCE, INDUSTRY, & MANUFACTURE.

No. 166.

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NOVEMBER 15, 1866.

1st & 15th
OF EACH MONTH.

VOL. VIII.

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ILLUSTRATION:

RESIDENCE, THE GLENTIES, CO. DONEGAL.

NOTICE.

It is respectfully requested that Subscribers and others who have been furnished with accounts from this office will send a remittance for their respective amounts at EARLIEST CONVENIENCE. Stamps taken in payment.

Contracts.

PORT OF DUBLIN CORPORATION.

NOTICE TO IRONFOUNDERS, &c.

THE PORT OF DUBLIN CORPORATION.

will receive Tenders for the supplying of Cast and Wrought Iron work for a Beacon on the "BLACKHORSE" ROCKS, at entrance to Crookhaven Harbour, County Cork, according to the Plans, which can be seen and copied at the Ballast Office, Westmoreland-street, Dublin, and at the Trinity House, London, on and after Monday next, 5th instant, between the hours of Eleven and Three o'clock.

Printed Specifications and Forms of Tender can be had on application to the Secretary at this Office, and must be sent in in one lump sum, accompanied by a detailed estimate of the quantities and prices.

Tenders are to be sent through post (prepaid), directed to the Secretary, Ballast Office, Dublin, and endorsed "Tender for 'Blackhorse' Beacon," so as to be received not later than Twelve o'clock, noon, on THURSDAY, the 15th NOVEMBER instant.

The Corporation do not hold themselves bound to accept the lowest, nor any Tender.

By Order,

W. LEES, Secretary.

Ballast Office, Dublin, 1st Nov., 1866.

PORT OF DUBLIN CORPORATION.

NOTICE TO IRONFOUNDERS, &c.

THE PORT OF DUBLIN CORPORATION.

will receive Tenders from competent persons for the supplying of certain Works in Cast and Wrought Iron for Additions to the FASTNESS ROCK LIGHTHOUSE, off South Coast of County Cork, according to Plans, which can be seen and copied at the Ballast Office, Westmoreland-street, Dublin, and at the Trinity House, London, on and after Monday, the 5th inst., between the hours of Eleven and Three o'clock.

Printed Specifications and Forms of Tender can be had on application to the Secretary at this Office, and must be sent in in one lump sum, accompanied by a detailed estimate of the quantities and prices.

Tenders are to be sent through post (prepaid), directed to the Secretary, Ballast Office, Dublin, and endorsed "Tender for 'Fastness Rock Works,'" so as to be received not later than Twelve o'clock, noon, on THURSDAY, 15th of NOVEMBER next.

The Corporation do not hold themselves bound to accept the lowest, nor any Tender.

By Order,

W. LEES, Secretary.

Ballast Office, Dublin, 1st Nov., 1866.

THE MIDLAND GREAT WESTERN RAILWAY, OF IRELAND, COMPANY.

TO MASONS, CONTRACTORS, &c.

THE Directors of this Company are prepared to receive Tenders for the Building of Walls with Piers and Gates, to enclose the West Wharf of the Canal at the North Wall, Dublin, according to the Plans and Specifications to be seen at the Engineer's Office, Broadstone Station. Tenders to be sent to the undermentioned, on or before Tuesday, the 20th instant.

The Directors do not bind themselves to accept the lowest or any Tender.

By Order,

HENRY BEAUSERE, Sec.

Broadstone Station, Dublin,
7th November, 1866.

COUNTY GAOL, CORK.

NOTICE TO BUILDERS.

TENDERS are required for certain Alterations and Additions to the above Prison.

Parties desirous of tendering for the above Work, must leave their names at the Office of WILLIAM ATKINS, Esq., Architect to the Commissioners appointed by the Grand Jury for same, 39, South Mall, Cork, on or before the 22nd instant, and pay the sum of 10s. 6d. for Bills of Quantities, which will be forwarded to each party, as soon as prepared by the Surveyor, E. P. GRIBBON, Esq.

Cork, Nov. 13th, 1866.

To Timber Merchants, Cabinet Makers, Machine Makers, Coach and Railway Carriage Builders, and Others.

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SALE will be held on TO-MORROW, FRIDAY, the 16th November inst., in the Wood Sales Sheds, BRUNSWICK and TOXTEETH DOCKS, LIVERPOOL, commencing at Twelve o'clock precisely, with

Two Cargoes of Quebec Yellow and Red PINE, OAK, ELM, BIRCH, ASH, HICKORY, Pine and Spruce DEALS, Pipe and Pultcheon STAVES and LATHWOOD.

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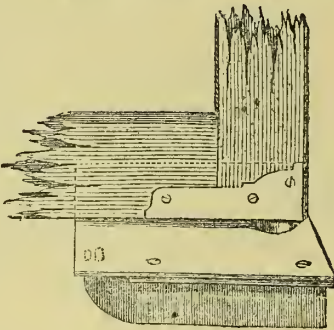
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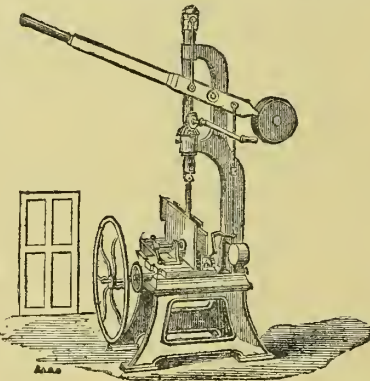
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PATENT MACHINE for **MORTISING, TENON CUTTING,** and **BORING,** with
SELF-FEEDING MOTION, a great saving of Manual Labour, **ONE** Man doing the Work of
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P. J. and Co. call especial attention to their **NEW COMBINED ENDLESS BAND** and
JIGGER or **BETTY SAW MACHINE** (patented in **GREAT BRITAIN, FRANCE,**
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 can be used in the same Machine, and is invaluable to those who have **FRET** or **INNER WORK** to
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The Dublin Builder.

VOL. VIII.—No. 166.

CANADIAN SCENES.—IV.

THE steamer Trenton left the canal basin, Montreal, with several passengers for Kingston, Belleville, Picton, Trenton, and other ports in the Bay of Quinté. We had not an opportunity of witnessing the exquisite beauty of the thousand islands of the St. Lawrence between Brockville and Kingston, as night stole on us suddenly, there being no such admonisher as twilight in this climate; so we will have to defer our notice of them till our downward trip, should we be fortunate enough to pass them by daylight.

Kingston was rather a rising town some years ago, but is now retrograding; it was at one time (alternately with Toronto) the seat of government for Upper Canada. I think but little of it as a fortification; but then I did not spend sufficient time in the neighbourhood to entitle me to form any sound opinion in this respect.

The Grand Trunk R.R. touches it, and has not added much to its prosperity. There is a fine spacious square up from the steamboat landing, and the houses appear substantial and well built.

There is a certain penitentiary at Kingston, where I predict Stephens and Co. will get a berth one of these days, along with those whom a desire to "cease to do evil and learn to do well," may exercise those apostolic virtues.

I pushed on from this city in time to get a glimpse of Lake Ontario. We scarcely enter this lake when we bid our adieu to the noble sheet of water, and paddle away up the Bay of Quinté—Amherst Island (so called after Lord Amherst, some time governor-general of Canada) hiding the sparkling waters of Ontario from our view.

The next place we call at is the sweet little town of Picton, after which we veer about, and would seem to be returning, till we reach Belleville, where the Grand Trunk R.R. passes, and where I met a casual friend, whose acquaintance I made while I was in Quebec. The Hon. W. Murney is the gentleman's name, and he, with many others alike honourable, are successful colonists in this country who hail from the Emerald Isle.

Remained about an hour at Belleville, and got to the end of our voyage in the evening of our second day.

Met with Mr. Robert Francis, who settled here at Trenton some years ago, and who, with his wife and family, are out here leading a happier life than he would be doomed to lead under old Mr. Killally, making roads in Connemara or Ballycroy.

Near Trenton is an Indian Reserve, where the red man is protected by the government from the encroachments of his white brother. All the way from Quebec here (say, in round numbers, 400 miles) get occasional glimpses of the Laurentides chain of mountains—said to be a continuation of the Alleghanys—varying thirty to fifty miles from the St. Lawrence, in the northern horizon.

Next morning, having embarked our downward cargo, consisting of wheat, rye, flour,

&c., and only a very few passengers, got under weigh for Montreal—arrived at our destination some twelve hours quicker than our upward trip, having the current of the St. Lawrence with us, and besides being able to "run the rapids," the Trenton only drawing about four feet of water! These rapids grew more and more frightful to navigate as we approach Montreal.

As we come near the thousand islands, between Kingston and Brockville, I am reminded of those halcyon days when I made the, alas! too short, acquaintance of a man who might now, from his talents and perseverance, be at the very head of the government of Canada. I met him for the first time in Quebec, and was introduced there to him by Captain Mackie, formerly of the 88th Connaught Rangers, then secretary of the Quebec and Richmond Railway. He was at the time only editor of the *Globe* (Toronto) newspaper. I knew my new friend afterwards to walk off with the first government prize for the best essay on Canada (the second being awarded to a Scotch barrister of the name of Dunkin). His description of the Canadian habitant being so simple, so lifelike, and true. But it was more in scenic description that he shone—as in describing the rapids of the St. Lawrence, the Ottawa, and Saguenay rivers, and the falls of the Chaudiere and Montmorenci, that he outvied all the native and foreign talent of the province at the time. He was shortly afterwards returned as M.P. by the largest and most respectable constituency in Canada West—for the great county of Essex. On the outset he made no great hand of himself, and, like the present Chancellor of the Exchequer, Disraeli, was well nigh discomfited; he sat down with the prophetic words on his tongue, "the time will come when you shall hear me." It was surmised that on the next occasion he would "come out strong" against the Rouge and Democratic party. The clerk, when dividing the house shortly afterwards, called out the name of the hon. member for Essex (C.W.), there was no response, neither were there any satisfactory replies to letters and telegrams to Toronto and Essex; day after day, and week after week elapsed before any clue or tidings of the poor fellow; at length a countryman of his own (a native of Westport, Mayo), when fishing along the banks of the Don (Toronto) discovered what seemed to have been the hat of a gentleman, and near the same spot, in a patch of rushes, the decomposed body of J. S. Hogan; there were no wounds of any kind on the body to cause the authorities to imagine he was murdered. I left Canada shortly afterwards, and since then have heard from a friend who was in Toronto, at the time that some parties were suspected, but there was no evidence, no matter how insignificantly circumstantial, to convict them. Few men had so brilliant a career before them. He had no enemies, not even political ones, it was thought, and his friends were legion on both sides; wherever he went his modest deportment, his unassuming manner, made friends of the foe; he was possessed of that virtue with which all men deserving the name of Irishmen are endowed—the love of the dear old country at home! He was at all times ready with his counsel, and also with his purse, to help "poor Paddy." I only regret my acquaintance with him was so brief, and could not imagine I'd sorrow so much for the death of one who I knew but yesterday. The public in Canada feel his absence, and bewail his ignoble fate and mysterious and untimely end.

His wife and relatives in Mayo deplore his loss, and this tribute is paid now by a fellow compatriot to his lato friend John Sheridan Hogan.

The "thousand islands" of the St. Lawrence are the grandest and most attractive of all the Canadian scenes I have beheld (Niagara alone excepted). These islands are so close to each other, and varying in size from an acre upwards, extending over ten miles of river navigation, and covered with birch, elm, and maple—the tree of Canada *par excellence*. These trees interlacing each other, and intertwining from island to island as if they never would be separated, forming little harbours or alcoves where the wild goose and black duck ever anon would be frightened from their repose by the sudden appearance of our gay little steamboat paddling the waves through intricate and marvellous passages, where the slightest deviation of the helm would perhaps throw us on a hidden rock, and dash the frail craft asunder. A sad fate befel here a Canadian family. The time of the American war with England a party of Canadians were flying from the ruthless knife of the revengeful and remorseless Yankee, when, turning round the point of one of those little islands, their canoe struck a submerged rock, swung round, and "tilted" over, hurrying the stalwart young man, his aged father and mother, with his industrious wife, into the boiling element. Some of their corpses were found a few days afterwards miles below the scene of this tragedy, near the *rapides-de-la-cascade*!

The foliage of the timber on these islands surpass in depth of colouring and vividness of green any sylvan scenery I have beheld in England, Ireland, France, or Spain: the deep soft orange of the elm, the silvery and delicate hue of the elegant birch, with the crimson and yellow foliage of the maple, those deep-toned colors variegated with the delicate greenness of the balsam fir, and contrasted with the perpetual and unvarying hue of the "ever-green pine," made up a picture such as a Turner or a Claude would like to pour-tray.

The exquisite scenery of this part of the St. Lawrence, it is true, cannot vie in classic memorials of antiquity with the Rhine or Danube, or other European rivers. All I have to remark is my surprise and regret that the poet who could sing of St. Anne's on the Ottawa did not go higher up the great arterial highway, and he would have immortalized the thousand islands.

Got safely to Montreal the second day, and was carefully and handsomely treated by Captain de Witt, the commander, and Jack Aston, the purser, who had been on my staff as "rod-man" (staff-holder), on the North Shore and Megantic Junction railways.

In my next communication I'll have something to say of the present seat of government, Ottawa, the Saguenay river, Tadoussac, Kamouraska, St. Anne's, and the Trois Pistoles Railway.

Dundalk, 7th Nov., 1866.

PUBLIC ABATTOIRS FOR DUBLIN.

At the special meeting of the Corporation, to be held on Friday, the following motion will be brought forward:—"That the city architect be directed to prepare plans and specifications for the erection of public abattoirs upon the most approved principles on the portion of the ground adjoining the new cattle market, lately taken up from the Rev. P. O'Reilly, same being most conveniently situate on the line of the Trunk Connecting Railway; and that abattoirs sufficiently extensive to accommodate all the persons who slaughter cattle within the borough be erected thereon by the Corporation."

A NEW TOWN-HALL AND PUBLIC OFFICES FOR BELFAST.

It will be recollected that a sum of £50,000 was voted for the purpose of erecting a new Town-hall in Belfast. In the subjoined letter, addressed to the mayor, Mr. Thomas Turner, architect, has laid before the Town Council a project for the conversion of the Linen Hall, Donegall-square, into a Town-hall and public offices:—

"Sir,—Having heard that there is a proposition afloat for utilising the ground now occupied by the Linen Hall, may I respectfully beg to suggest that this site be considered as highly desirable for the proposed Town-hall, and that with the Town-hall may be grouped other public offices, which could be added from time to time as the city may require, but all in accordance with one grand exterior plan? I am aware that there are difficulties in the way of any other appropriation of this ground than for the purposes of a Linen Hall, but possibly these may be overcome, so that this now gloomy spot may be made, perhaps, the most useful and attractive in Belfast. Should it be found impossible to disturb the rights and uses of the Linen Hall, I would suggest that they may be continued, and be no hindrance to the project, and that all its uses may be provided in the lower portion of the building proposed.

"In view of the increasing wealth and importance of Belfast, it is, perhaps, not likely that the present dingy brick building, with its gloomy enclosure of railings and trees, will remain a blot upon the most valuable spot in the city. I would, therefore, earnestly suggest that, before the ground be appropriated to a less dignified purpose, this site be, if possible, obtained, and employed for a grand group of public buildings, with the Town-hall in the centre, the railings and trees cleared, and the space opened and beautified by statues of eminent men. This would then form a handsome terminal to Donegall-place and Linen Hall-street, interrupt the monotony of the long line of street proposed from York-street, and preserve to the heart of the city a healthful open space, which may be made as beautiful as it would be useful.

"In the year 1857, when the Town-hall was talked of before, I suggested the same site, and made a sketch showing generally the arrangement proposed; but having found that Belfast was not yet ripe for such a project, and that the interest in the Town-hall scheme became less, I did not press the matter, and left the sketch with Mr. J. F. Ferguson, hoping that it might be some day favorably considered.

"Leaving the Town-hall subject, I would beg leave to submit, for your consideration, another idea. I have observed the inconvenience of the present crowded traffic across the Long-bridge, and the interruption and sometimes absolute stoppage of the way by coal-carts crossing from the quay to the left side of the road. I know it is intended to widen the bridge; but I would take this opportunity of suggesting that, in addition to this, a land arch be made from the coal-quay under the roadway to the other side of the bridge, so that all coal-carts to the city may enter the bridge on the left-hand side of the road, and thus prevent the great annoyance and inconvenience which now arise from coal-carts crossing the through line of traffic.

"May I beg that you will kindly have the foregoing suggestions submitted to the proper committee? and trusting that they may help to mature the important consideration of a desirable site for the Town-hall, I am, Sir, your obedient servant,"

"THOMAS TURNER."

This letter was accompanied by a plan explanatory of the arrangement suggested. The centre portion of the Linen Hall is proposed for a Town-hall; the remainder for public offices, atheneum, public library, &c. Mr. Turner also proposed to clear away the railing and the trees round the Hall, and to have the whole space open to the building; but he would have a very low enclosing wall, ornamented with statuary and lamps.

We may remind our readers that it is from the designs of Mr. Turner the works for the new approach to our City-hall are being carried out by Mr. Michael Meade, contractor, and which, when completed, will greatly improve that fine building.

TENEMENTS FOR THE LABOURING CLASSES.

THE Board of Public Works have issued the rules and regulations for obtaining loans for the construction of lodging-houses for the labouring classes. In the pamphlet, containing but twenty pages, will be found a careful digest of the Labouring Classes Lodging-house Act, and the Dwellings Act of 1866. Parties desirous of obtaining loans for the construction of labourers' cottages, and any corporation about to construct residences for artisans, can find herein the necessary rules to be observed. The following extract refers to the requirements in regard to buildings intended to provide proper accommodation for the working-classes in towns:—"In densely populated places where it may be necessary, and it is designed to provide the desired accommodation in blocks of new buildings of several storeys in height, containing separate, and it may be, numerous tenements on each floor, it will be required, as a general rule, that each tenement or dwelling should consist of not less than two or more than four apartments; that each tenement should be distinct and complete in itself, and provided in one of the apartments with a suitable cooking-range or stove; that the staircases should be of stoop, with the wells thereof built up; that on each floor, if of large extent, there should be separate, and as far as possible removed from each other, closets and lavatories for the males and females; that there should be a washing-room, laundry, and drying-room for the general use of the occupants of the buildings; that an ample supply of good water should be laid on, or available; that where there is any public gas manufactory, gas should be intro-

duced; that complete an effectual provision should be made for the discharge of sewage, and for the prevention of the return into the building of the gases generated therefrom, and conveniences provided for the reception of dust and refuse, and their ready removal; that the ventilation of the building should be as perfect as possible, and that a paved court-yard should be provided for the recreation of the children of the occupants' families."

A LARGE DIVING-BELL.

THE diving-bell used in constructing the piers for the Newburyport bridge over the Merrimac river is thus described by the *Boston Advertiser*:—"The diving-bell was manufactured by McKay and Aldus of East Boston, and is the largest bell ever made in this country—weighing upwards of six tons. It is pyramidal in shape, and is six feet square at the bottom, and about seven feet in height to the apex. It is constructed of iron two and a half inches in thickness, firmly bolted and strengthened at the corners, and has heavy iron clamps fastened on either side, to give it additional weight. It has twelve lights of half-inch glass, each six inches square. An immense derrick holds it suspended by chains attached to four iron rods, which embrace two of its opposite corners. When not in use the bell rests upon a car which runs upon rails over the well-room of the barge which contains the apparatus. A gutta percha pipe enters the side of the bell near its base, for supplying air by means of an air-pump. A stop-cock in the top when opened permits the escape of impure air, and a cord running through a small hole in the top is the "telltale," by which the diver communicates his signals to persons above water. The necessary machinery for raising the bell is driven by a steam engine.

DUBLIN STEAMPACKET COMPANY.

THE 77th half-yearly meeting of the above company was held on Wednesday, when a favorable report was laid before the shareholders. We can find space for but a few extracts:—

"In addition to the ordinary repairs required by the mail packets and other vessels of the company, the Munster and Leinster have been provided with new boilers, and a complete overhaul of their engines. The hulls of these vessels were found to be in as good condition as that of the Ulster; thus affording further proof of the fidelity with which the respective builders, the Messrs. Laird and the Messrs. Samuda, had fulfilled their contracts with the company. It is a cause of satisfaction and thankfulness to be enabled to state that no casualty has taken place to any of the company's ships during the last six months. The vessels which had been placed in the autumn of last year in opposition to those of the company on the Liverpool line were continued to the beginning of July, when they were suddenly withdrawn, after entailing a loss of upwards of £25,000, as publicly stated on the part of their owners.

"In the Committee of the House of Commons which inquired during the last session into the subject of trade in animals, the directors had again the gratification of hearing the testimony of gentlemen connected with that branch of commerce, as to the especial, safe, and satisfactory manner in which the conveyance of live stock has been uniformly managed by this company. On a former occasion the directors communicated that they considered it advisable to add to the efficiency of the fleet by providing two iron vessels of the most improved class to replace those built of timber; and they have accordingly entered into a contract for two steamships of the largest size suited to the port, of the highest speed, and provided with superior cabin accommodation for first-class passenger traffic. It is with much satisfaction that the directors have to state that one of those vessels will be built in Dublin by Messrs. Walpole, Webb, and Bewley, a firm which, though but recently established, have given ample proof of their ability to build a paddle-wheel steamer, which will add to their own reputation, and be creditable in every way to the City of Dublin. The other vessel will be built by Messrs. Laird, a firm with which the company have had long and satisfactory connection.

"Your directors, in conjunction with the other steam interests of the port, have looked forward with anxious expectation to the fulfilment of the engagement entered into before a committee of the House of Commons last session for a reconstruction of the Ballast Board, with the view to provide equitable and adequate representation to all interests.

"The mail packet service has been maintained with undiminished efficiency during the past half-year; and the directors have the satisfaction of being able to say, that since the vessels were provided with their new boilers, shorter passages have been made than at the commencement of the service by the same vessels. The want of the means of cleaning the hulls of the packets at Holyhead as frequently as may be requisite to enable them to maintain their full speed,

is still felt, and the directors must, therefore, continue to urge the subject on the attention of Government. In conclusion, the directors recommend the payment of a dividend of three per cent., free of income tax, out of the profits of the half-year, after the allocation of one per cent. on the capital of the company of the Parliamentary Contingency Fund."

IRISH BUILDING NEWS.

ESTABLISHED CHURCH.

The parish church, Loughall, Co. Armagh, has been re-opened. Two transepts, of Gothic architecture, with pointed open roof, have been added to the original building. The old square pews and galleries have been cleared away, and replaced by open seats; and the heavy pulpit and reading-desk, which blocked up the central passage have given place to more appropriate arrangements. There is a marked improvement in the appearance of the interior, presenting an open area, well lighted and ventilated. A stained glass window at the east end is the gift of Mrs. Cope, of Drumilly. The cost of the repairs and additions is £1,400, raised by the parishioners, aided by a grant from the Ecclesiastical Commissioners.

A handsome window has been put up over the viceregal pew in the church of the Royal Hibernian Military School, Phoenix Park, in memory of the late Earl of Carlisle. The centre represents Christ receiving little children, and the words "Suffer little children to come unto me" underneath. At the base of the window are his lordship's arms, under which is written, "To the Memory of Frederick William, Earl of Carlisle, K.G., Lord Lieutenant of Ireland. Born 1802. Died 1864."

ROMAN CATHOLIC CHURCH.

The beautiful church of the Augustinians, John-street, is being vigorously hurried on towards completion. The nave is now slated, and the temporary stud partition (which will be removed when the building is extended to the entire length eastwards) is almost finished. The great west window is nearly completed, and, as far as we can judge from looking at it encumbered by scaffolding, the effect of it will be splendid. Altogether this church promises to be one of the finest in the kingdom if funds permit of the architects' design being carried out in its entirety. We hope to be able, before the close of the year, to present our readers with a view of it, taken from a photograph of a large drawing of the church, by Mr. T. Hevey, which is at present in the gallery of the Exhibition Palace. The architects are Messrs. Pugin and Ashlin, Stephen's-green and Ely-place, Dublin. The works have been carried on by a clerk of works, under the immediate superintendence of the architects, until recently, when a contract was made with Messrs. Meade and Son, of Great Brunswick-street, for the roofing, &c., which so far has been performed in the most satisfactory manner.

The contract for building the new Roman Catholic church at Rathkeale, county Limerick, has been taken by Messrs. Ryan and Son, Limerick and Waterford. The designs are by Mr. J. J. McCarthy, Great Brunswick-street, Dublin.

GENERAL.

The extensive additions to the Dundalk barracks, which have been in course of construction for two years, for the accommodation of married troopers, are now completed, and will be handed over by the contractor in a few days. The new buildings are situated within a few paces of the main gate, yet, still sufficiently isolated from the general barracks, as to almost form an independent structure itself. The buildings occupy four sides of a square, and are semi-detached, three of the blocks being laid out into apartments, the fourth being fitted up as a lavatory, laundry, and drying-house. The material used is hammered limestone, with red brick dressings for windows and chiselled limestone for angles and abutments. The buildings are, with the exception of the laundry, two storeys high. An elegant metal balcony is thrown forward immediately over first storey, and running the entire length of each block is covered by the projecting roof. Each apartment measures 16 feet by 13½ feet, and is fitted up with gas, kitchen-range, &c. The buildings were contracted for and erected by Messrs. Creaser, of Drogheda, at a cost of £7,000. Messrs. Jeakes, of London, supplied the boilers, &c., as also the gas-fittings. Other additions are about being erected in this barrack by a Belfast firm, including a new range of offices, stables, &c.

We learn that the Board of Works has approved of the application for a loan to Bray township, so far as relates to the increased and improved sewerage of the town, and their inspector has been directed to ascertain if the preparatory conditions for such loan have been complied with.

A new coast-guard station is to be built at Killybegs, County Donegal, on a beautiful site adjoining the town.

THE MARSH TESTIMONIAL.

THE statue of the late Sir Henry Marsh was on Friday last handed over to the King and Queen's College of Physicians, by a deputation on the part of the subscribers. The ceremony took place in the large hall of the College, Kildare-street, and was attended with becoming solemnity. The statue (which is by Mr. Foley, R.A.) is placed at the northern end of the hall, and amply justifies the praise which has been bestowed upon it.

A number of the fellows of the college were present, wearing the hoods of their several degrees over their academic costumes.

The President of the College (Dr. Stokes) occupied the chair.

Dr. Banks, on being called on, said—Mr. President, on the part of a large number of the general public, as well as of very many members of our profession, I am here to-day to present to the King and Queen's College of Physicians in Ireland a gift of no ordinary value—the statue of an eminent physician and a distinguished member of this college, the late Sir Henry Marsh. The lives of physicians are rarely marked by events of startling interest, and so it must be from the nature of their avocations, their habits of life, and modes of thought, even where the highest success and its attendant honours are attained. Sir Henry Marsh was born in the county of Galway, towards the close of 1790. His father was rector of Loughrea. Of his remote ancestry, it is sufficient to say that among them will be found names well known amongst the nobility of rank and intellect. After a successful undergraduate course in Trinity College, he graduated in arts in 1812, and in medicine in 1818, and in the same year he became a licentiate of the King and Queen's College of Physicians. In 1820 he was appointed one of the physicians of Steevens' Hospital, and to this circumstance may be fairly traced the foundation of his great fame as a practical physician. In conjunction with Graves, Cusack, Wilnot, and Jacob, he founded the once celebrated School of Medicine in Park-street, an institution remarkable for having supplied with professors the School of Physic and the Royal College of Surgeons in Ireland. About the same time, aided by the late Dr. Charles Johnson, and Dr. Cumming, of Armagh, he established an institution for the treatment of the diseases of children, now situated in Pitt-street. In 1827, on the resignation of the late learned Dr. W. Stokes, he was nominated Professor of the Practice of Medicine in the College of Surgeons—an appointment which, however, he resigned in 1832, feeling that the exigencies of large and increasing practice rendered it impossible for him to discharge his duties conscientiously and efficiently. Endowed with remarkable power of observation, he was prepared to turn to the best advantage the opportunities he enjoyed as physician to Steevens' Hospital, and thus he acquired that large experience and that profound knowledge of disease which caused his opinion to be so frequently sought and so highly prized in cases of doubt and difficulty. The first fruits of his clinical researches may be seen in the Dublin Hospital Reports, where we find contributions from his pen of great and abiding value of the essays published at this period. I would especially direct attention to those on "The Origin of Fever," on "Jaundice," and on "Spasm of the Glottis." In later years, and in the plenitude of his great experience, the all-absorbing duties of extensive practice prevented Sir Henry Marsh from contributing as much as could have been desired, and as he himself wished, to medical science. Nevertheless, from time to time, he published in the *Dublin Quarterly Journal* and in the *Dublin Medical Press* papers of great importance and lectures replete with sound practical information. Of those who, with Marsh, co-operated in laying the foundation of the Irish School of Medicine in the Dublin hospital reports, how few remain to enjoy the exalted position to which their labours so well entitle them. Sir Henry Marsh rose in the estimation of the public, and in the confidence of his own profession rapidly, and the eminence once attained was unshaken to the last moment of his life. This circumstance was, in a great manner, to be attributed to the fact, that in all his relations with his brethren, his conduct was ever guided by the nicest feeling of delicacy, and the strictest sense of honour. The highest distinctions in the power of this college to confer, having been freely and repeatedly bestowed upon him, he received the honour of a Baronetcy in 1839, at the same time with his friend, Sir Philip Crampton, whose pupil he had formerly been. It may be interesting, in connection with this event, to mention that Sir Thomas Molyneux, the first physician in Ireland raised to the dignity, was a maternal ancestor of Marsh's. Six years have nearly elapsed since in the apparent enjoyment of perfect bodily health, and in the full vigour of his mental powers, Sir Henry Marsh was suddenly removed from amongst us by the hand of death. Many who are present will remember the painful feeling of regret which pervaded all classes of society in this city, when

it became generally known that he who had so often ward off the assaults of disease in others, had himself been stricken down. On those who had the happiness of enjoying the closest intimacy with the deceased, from within the circle of his chosen friends, the blow fell heavily; they experienced a shock, the severity of which no words of mine could adequately express, the general and hospitable gentleman, the true-hearted friend and the great physician was no more. Painful was the feeling that we should for ever miss

"The touch of the vanished hand,
And the sound of the voice that is still."

In a few days after the grave had closed over him whose memory we are here to-day to honour, it was arranged that a meeting of his friends should be called for the purpose of devising some means of manifesting, by a permanent memorial, the respect in which his memory was held. The meeting was fitly presided over by the late Mr. Cusack, who was his old colleague and life-long friend. The first resolution adopted at this meeting was, "That the high position which Sir Henry Marsh so long held in the estimation of his professional brethren and of the public should be marked by some lasting testimony of his eminent abilities." It was subsequently agreed upon by the committee that a marble statue, to be placed in the Hall of the College of Physicians, would be the most suitable form for the testimonial. This proposal was submitted to a general meeting and unanimously adopted, the subscribers who had no connection with our profession agreeing with us that the college over which he had so often and so efficiently presided, and with which he was so long and so intimately connected, would be the most appropriate site which could be selected for the statue. It now remains for me to call attention to the admirable manner in which the work entrusted to Mr. Foley has been executed. I speak the opinion of those more competent to judge than I am, when I affirm that the statue of Sir Henry Marsh is one of the most successful efforts of our highly gifted countryman. In presenting the statue to the College of Physicians in the name of the subscribers, as I now do, I have no doubt of the value which will be attached to it. By those upon whose memories the features of our departed friend are indelibly impressed, this statue will be appreciated for its marvellous likeness, and by those who are to succeed us in this college, and who never looked upon the original, it must be prized for its own intrinsic worth as a rare specimen of a great sculptor's skill. And now, sir, having performed my allotted task, before I conclude, I must crave your permission to make one additional remark. To myself, and to those who have been associated with me in bringing to a conclusion the duties which we undertook, it is a subject of much gratification that the chair of this college should be at this time occupied by one who, like Sir Henry Marsh, has ever laboured to maintain the honour and dignity of the profession, and to elevate the social and scientific position of medicine in this country.

The President said—Dr. Banks and gentlemen of the deputation, it is now my grateful task to offer, on the part of the King and Queen's College of Physicians in Ireland, our thanks for the noble gift you have made to us. In choosing as the proper site for this memorial the Hall of that College, of which he who is gone was so long an honoured member, you have typified his devotion to medicine and to the institution of which he was once the head and always the ornament. Ireland does not want for representative men. She can proudly point out many such in arts, in arms, in science, and in literature, in poetry, and in oratory, and among the leading men in Irish medicine Marsh can fitly claim a place. You may rest assured that his statue will be affectionately and carefully preserved by us, and, we trust, by those who will succeed us, not alone on account of its surprising merit as a work of art, but in memory of an earnest and successful worker in science. The great physician, the true friend, the thorough Irish gentleman, Sir Henry Marsh was one of that noble band of men whose labours marked the intellectual uprising of this country after the collapse of nearly a quarter of a century which followed 1800. It was the time of Bingleys, of Lloyd, of Hamilton, of McCullagh, and of Butler, of Apjohn, of Robinson, of Grane, of Petrie, of Todd, of O'Donovan and O'Curry, of Austin, of Griffin, of Mangan, of Ferguson, and McCarthy; and in medicine, of Cheyne, Collis, Carmichael, Cusack, of Graves, Corrigan, Adams, Jacob, Smith, Beatty, Montgomery, and many more. It was at this period the University received its great impulse in consequence of the reforms introduced by Provost Lloyd, when the Royal Irish Academy showed signs of a new and vigorous life in the creation of its museum by our great countryman, Petrie, when the Zoological and other bodies were founded, when new schools of medicine and surgery sprung up, when the Dublin journal of medicine was established, when the *University*

Magazine first appeared, and when the great project of the topographical survey of Ireland was organized by Sir Thomas Larcom. It was, in brief, a time when the mind of the country seemed to wake up to a consciousness of its power and saw the work that was before it. It must be gratifying to this College to see this noble Hall in which we are now assembled becoming, as it were, the Irish medical Walhalla, where will be preserved memorials, which, though dead, yet speak of those true soldiers of medicine whose works live after them and whose days were worthy. We have the bust of Graves, by Hogan, of that great and philosophical teacher who founded and built up the fame of the Irish School of Chemical Medicine. We have the bust, in clay, of Sir Dominic Corrigan, to whose exertions we are indebted for the building in which we are assembled. It is from the hand of the master who fashioned this figure, and we are promised soon a more ambitious and finished work. We have the portraits of Dun, of Percival, of Cheyne, of Brooke, and Mills, of Barry, of Corrigan, and of Mayne, and so we are following in the steps of the Royal College of Physicians in Ireland, on whose walls hang so many noble portraits of the noble fathers of British medicine. Like many other places, Dublin is deficient in monuments of this kind, and even where members of our profession have conferred lasting benefits by founding great institutions for the purpose of charity and science, we miss their monuments. In our great Lying-in Hospital there is a plaster cast of the founder, with the inscription "*Miseris Solamen Institut.*" Why should not his statue adorn his hall? So, again, at Steevens' Hospital, a single tablet records the name of the founder, and the pious work of his sister; and to come to ourselves, we have not even a portrait of Stearne, our founder, in the reign of Charles II., and whose history has been so ably worked out by one of our fellows, the learned Dr. Belcher. But, indeed, few members of our profession have been honoured by statues. The statue of Dr. Lucas, in the Corporation Hall, was erected from political considerations, in the last century. Those of John Hunter and the late Dr. Robert Bentley Todd, are, like that of Marsh, fitly placed in the scene of their labours, and the only public statue to a physician in these countries is that of Jenner. This was lately moved from Trafalgar square to a more obscure position. How slowly do our barbaric traditions depart from us! But in time mankind will learn that to save is more excellent than to destroy, and that the great physician as well as the great soldier, if he has done his duty, is equally entitled to honour. The art of the sculptor has various objects, and, consequently, in its execution the artist is guardedly different. His work may be intended as a part of a great architectural whole, as in the case of the figures on the porticos of the Bank, and the admirable symbolic heads of the river deities of Ireland, which adorn the arches and windows of the Custom House. Or it may be for a private statue in which the figure, if not colossal, is more or less idealised, the accuracy of the likeness, though important, being made subsidiary to the general effect; or the statue may be intended as a portrait of one whom his children and children's children, his friends, his fellows, and their successors wish to keep in the casting marble ever before them. This statue, as well as that of Goldsmith—both from the chisel of Mr. Foley—are admirable examples of the latter class. To the observations of Dr. Banks on the merits of the work it would be superfluous to add anything. There are few, if any, works of art, even of those of the best Greek period, to which that kind of criticism which consists in fault-finding may not have room to apply. But, as a great writer has remarked, we should not seek to detect deficiencies and imperfections in works of art until we have learned to recognise and discourse their beauties. This power of seeing and feeling the beautiful and true is so rarely met with that the term criticism is commonly held to mean depreciation. Those who follow this method are always vain, often ignorant, or imbued, as Winkelman has it, with excess of caution. They appear to have determined to admire nothing because they believe admiration to be an expression of ignorance, forgetting what Plato says—that admiration is the sentiment of a thinking mind and one of the avenues which lead to philosophy. I have but to add that the situation for the statue was chosen by Mr. Foley, and that the pedestal, also designed by him, has been gratefully furnished by the College.

In France, whence enormous quantities of wine are exported, the time and material expended in packing the bottles are of great value. A saving on this item has been effected by the use of India-rubber rings, which, placed round the bottles, prevent all jar; and by keeping them apart renders breakage impossible. When the bottles are unpacked, the rings are put aside for subsequent use.

THE CENTRAL PACIFIC RAILROAD.

THE following account of the condition, character, and workings of the Central Pacific Railroad is taken from the San Francisco *Bulletin*, and may prove interesting to our readers:—

HOW FAR THE ROAD IS IN OPERATION.

The work of grading the Central Pacific Railroad began in February, 1863, and, after some unavoidable delays in receiving supplies of iron and ties contracted for, the first 31 miles of track was finished to Newcastle, in June, 1864, reaching an altitude of nearly 1,000 feet. Some further delays were caused at this point by vexatious litigation, originated by enemies of the enterprise. Work was actively resumed in October following, and the road is now thoroughly completed and in successful operation to Alta, a point nearly 70 miles eastward from Sacramento, and 3,625 feet above the sea—an altitude nearly equal to that of the loftiest peak of the Catskill mountains, Sacramento, the initial point of the road, is only 54 feet above sea level. The valley surrounding it swells gently almost from the very bank of the river. In going the first $7\frac{1}{2}$ miles towards the Sierra Nevada, the cars ascend 22 feet; and in going $7\frac{1}{2}$ miles further they ascend 104 feet more. The true base of the Sierra Nevada would therefore seem to be where the President and Prof. Whitney fixed it, in the midst of an apparently level plain about 7 miles from Sacramento. To this point the Government aid in bonds was only 16,000 dollars per mile; while for the 150 miles lying east of that point it is 48,000 dollars per mile.

DESCRIPTION OF THE ROAD TO ALTA.

The Central Pacific Railroad is, of course, built in strict accordance with the Act of Congress, which requires it to be a broad gauge, first-class road. The bed is one of the most solid and even in the Union. The first heavy piece of work is the splendid bridge that spans the American river near Sacramento. From this river to the junction, 18 miles beyond Sacramento and 135 feet higher than the latter place, the grade is very light, although at the end of this stretch it has fairly entered the foothills—the region of red, gravelly soil, where the best wine-grape thrives and the picturesque white and evergreen oaks flourish in orchard-like groups. Junction is the point of intersection with the Central Railroad, which skirts the foothills from Folsom, southward, to Lincoln and Bear river northward, reaching within 12 miles of Marysville—a total length of 26 miles—crossing the line of the Central Pacific nearly at right angles, and furnishing it important feeders. Beyond Junction the hills rise more rapidly, and at Newcastle, 31 miles from Sacramento, an altitude of 980 feet is reached. The grading through rocky points becomes quite expensive, and there are bridges, brick or stone culverts, and heavy cuts and fills. Five or six miles further, near Auburn, an additional ascent of about 400 feet has been overcome, and one of the heaviest cuts in the road is met. This is Bloomer Cut, which is 63 feet deep and nearly 800 feet long, excavated through black slate and diluvium. The “fillings” are no less than great earthen walls thrown across gulches and ravines, often from 25 to 50 feet deep, and wide enough on top for a double track. The solidity of the trestle and earth-work on this section has been tested at least one rainy season. As much of the road bed is rock, it is of course solid to an extent that defies the elements.

At Colfax, 62 miles from Sacramento, an elevation of 2,448 feet has been attained, and some of the heaviest work on the road has been done. From the rolling foothills the cars have ascended to the long ridges or ribbed spurs of the Sierra Nevada, which are clad with tall pines, firs, and cedars, and overlook blue and misty canons of great depth. For a short distance the grade reaches 105 feet to the mile, and even touches the legal maximum of 116 feet to the mile, but is generally below 100. The locomotives, which are much beyond the average capacity, pull sensibly slower and harder. There is no down grade anywhere—it is all either level or ascending, but very seldom the former. The cuts—through soft granite, slate, limestone and diluvium—are frequent, and show the stratification and geological features of the mountains. At Long Ravine, 2 miles beyond Colfax, there is a bridge and trestle 960 feet long, and 115 feet high above the deepest depression of the gorge it crosses. It is an exceedingly strong and handsome structure, and is covered with asphaltum sheeting to protect it from the weather. But the longest trestle work is 5 or 6 miles beyond Colfax, at Secret Ravine, crossing a gorge which empties into a profound canon. This magnificent structure is 1,100 feet long, and 93 feet high at its loftiest. Going over it in the cars one seems to be riding on air, and about to plunge 1,000 feet into the dizzy gulf beyond. It is near this point that the famous Jehoval or Devil's Gap is seen yawning mistily in the distance—two great pronouncements, 2,500 feet above the river at their bases,

fronting each other bluffly, as though communing of the shock that had split them from the main Sierra.

MAGNITUDE OF THE WORK—GRANDEUR OF THE SCENERY.

Whirling across the lofty trestles and embankments, around the rocky cliffs, and through the deep cuts, one is strikingly impressed with the engineering difficulties of the road, and with the successful manner in which they have been overcome. The deepest cuts are much more impressive by having their side terraced in broad benches to prevent slidings. Even this laborious and expensive precaution has not always prevented slides from the upper benches, which slides had to be shovelled and carted away, lest they might push down to the track. Shooting through one of the rocky cuts and looking up its damp walls 100 feet, the traveller experiences a sensation of wonder. The bottom of the walls in some of the cuts is covered with yellowish salts of sulphur, alum and iron, while the rock itself—lime or slate—is blue up to the line of the surface earth, which is generally red. Iron (sulphuret or oxide) is the colouring material all through the mountains. No genuine sandstone has been found. One of the cuts, near Gold Run, $2\frac{1}{2}$ miles above Colfax, goes through a deposit of gravel, which is known to contain gold in paying quantities. The face of the bank is being washed away by the hydraulic process. This same process, we may add incidentally, was employed by the Railway Company in one or two instances as an expeditious assistant in removing earth.

As the grade of the railroad keeps well up the flanks of the ridges, and often along their very summits, it affords constant views of some of the grandest scenery in the world. This may be understood better from a simple illustration of the topography of the Sierra Nevada. If we take the knuckles of the hand for the backbone or crest of the range, the fingers spread and inclined downwards will represent the ribs or ridges projecting from the summit range toward the great valley, and minor spurs from their ends can be imagined for the foothills. Between these ridges are blue gulfs or canons from 1,000 to 3,000 or 4,000 feet deep, according to their nearness to the summit crests, and through them flow the rivers and creeks of the western slope. Viewed across the canons, the lines of these ridges seem to be drawn along the sky with perfect straightness, while their broad flanks bristle with lofty conifers. The Central Pacific Railroad, after leaving the foothills, follows pretty closely the brow of the ridge between the American river and Bear river, striking finally upon a ridge at the headwaters of the Yuba. Hence it affords many sublime views of cavernous spaces and lofty heights, and curves sometimes along the edge of dizzy precipices. The grandest view on the completed portion of the road is that obtained of a noted point which is aptly called Cape Horn, 3 miles beyond Colfax. The road here makes a double curve like the letter S, rounding a perpendicular cliff of rock which overlooks a canon 1,200 feet deep, at the bottom of which the muddy current of the North Fork of the American unwinds its yellow ribbon. The road bed is partly built on the edge of an artificial wall 100 feet in perpendicular height. The view from this point is sublime, not alone with reference to the awful depth that seems to be directly under the cars, but as comprehending a wide stretching amphitheatre of hills that rear their purple walls softly in the distance. On one side is seen a chasm with its towering mountain boundaries; on the other, close enough almost to touch with the hand, a straight cliff of jagged rocks rises like a rude monument. After quitting this scene, it is strange to reach, within two or three miles further, the comparatively level and tame surroundings of Dutch Flat—a prosaic mining camp girt by thinned forests of pine and cedar. Here the altitude is 3,425 feet, and two miles further, at Alta, the present terminus of the track, it is 3,625 feet, as before stated. At this point we will leave the completed portion of the Pacific Railroad, to see what is doing for its extension.

THE GRADE FROM ALTA TO THE SUMMIT.

The grade is completed 23 miles further, to Cisco, which is 5,911 feet above sea level, and $15\frac{1}{2}$ miles this side of the summit. The ascent in this distance is 2,286 feet, making the heaviest grade on the whole road. The grade varies from level to 116 feet—the largest proportion being about 90 feet. There are not more than 10 miles on the entire line, from Sacramento to the Nevada base, which is the maximum. After 87 miles—midway between Alta and Cisco—the heaviest grade is 90 feet; and as the summit is approached the grade will be nearly level, the Pass opening through a valley between the double crests of the range—as do all the passes of the Sierra Nevada. Owing to the greater elevation, the work on the grade between Alta and Cisco is of greater magnitude and the scenery is more uniformly sublime than below Alta. One cut at Prospect Hill is 170

feet across the top, 125 feet drop, and 680 feet long. A “fill” at Blue Canon is 88 feet deep and 530 feet long. There are several cuts of some hundreds of feet long and 30 to 50 feet in depth, and several that are 1,500 feet long, but not deeper than 10 feet as an average. These cuts are through granite, limestone, slate, clay, cobble-banks and sand. In the Prospect Hill cut fossil-fish and leaves were found in a substance called chalk, but which may be kaolin. One of the cuts, where there is only a side excavation, is known as Chalk Bluff. If there are really cretaceous formations and cretaceous fossils in the high Sierra, the fact is one of great geological interest. One of the cuts is known as Fort Point, its squarely terraced slopes giving it the appearance of a military fortification. It is about 100 feet deep. The deepest fill is 105 feet high, and about 400 feet long. The most extensive piece of masonry is the granite culvert across Canon creek, $1\frac{1}{2}$ miles above Alta. It is 200 feet long, 28 feet high and 54 feet wide, under a fill 80 feet deep.

The laying of track from Alta was to have commenced on Monday, the 17th of September, and it is believed the 23 miles of the road from Alta to Cisco will be in running order by the latter part of October.

RESIDENCE, THE GLENTIES, CO. DONEGAL.

Our illustration with this No. is of a house to be erected at the Glenties, Co. Donegal, for D. MacDevitt, jun., Esq., from the designs of Mr. T. Hevey, 16, Harcourt street, Dublin.

The house will contain, on the ground floor, drawing-room, dining-room, parlour, kitchen, and the requisite offices; on the chamber floor there will be ample sleeping accommodation. A pleasing feature of the front, shewn in our view, is the open porch, introduced between the tower and the projecting wing, as a shelter to the principal entrance, which is situated in the lower stage of the tower—a precaution rendered very necessary on account of the stormy weather prevailing in this highland district during the winter months.

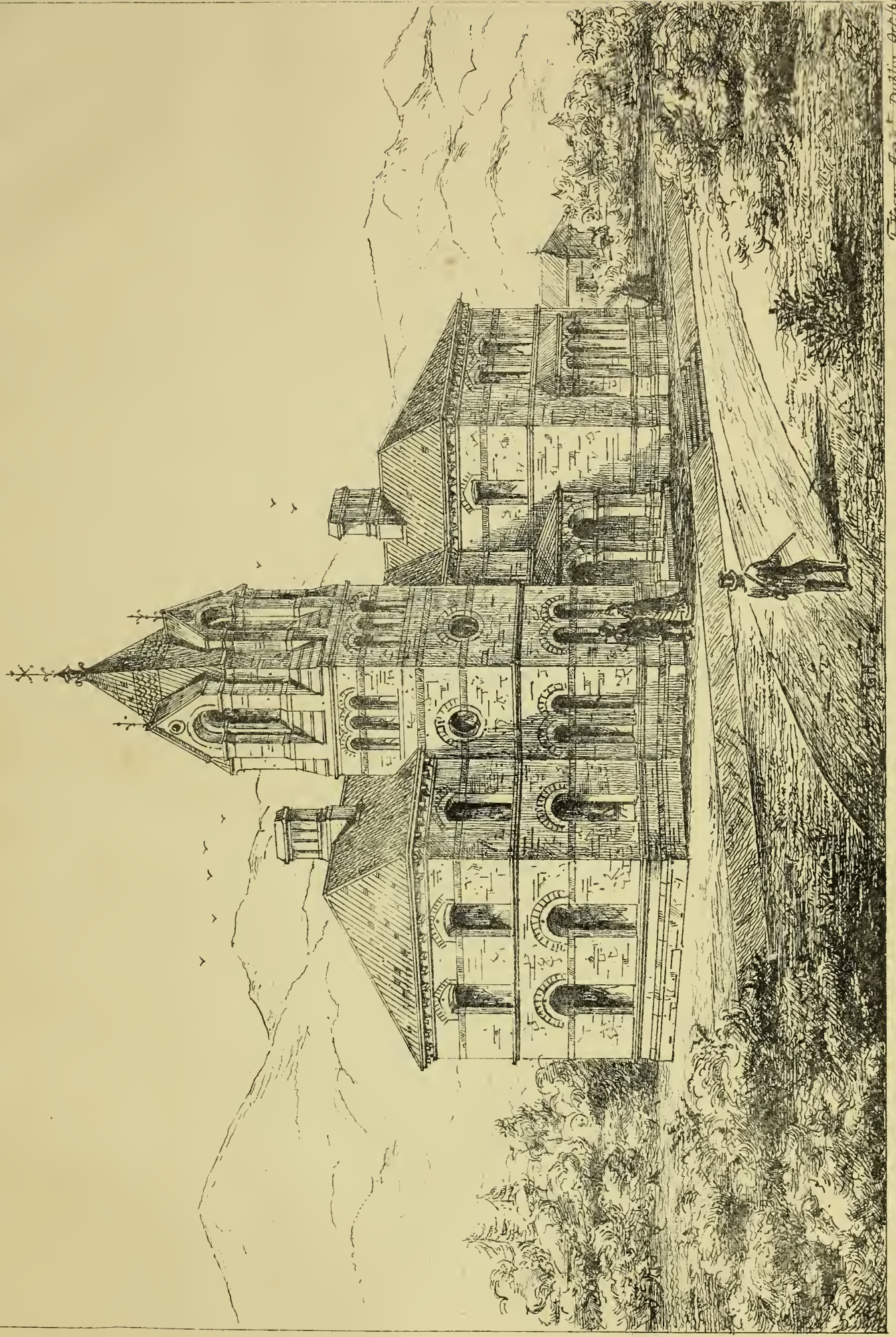
The materials with which the building is to be constructed are, the local limestone roughly punched for the walling, and cut stone for the dressings, which are to be of the simplest possible character.

It is gratifying to witness the introduction of architectural buildings into a district (such as this portion of Donegal) where the houses generally are of the most unpretending character, invariably covered with whitewash—a very desirable thing from a sanitary, but scarcely so from an architectural point of view.

The site contemplated for the building is on an eminence a little outside the town at the convergence of the glens: it is opposite the Roman Catholic parish chapel, lately much improved, as we are informed by a recent copy of the *Derry Journal*, which describes the improvements to consist of “the beautiful porch to the parish chapel, . . . the seating and embellishments of the interior, &c.” These works were executed under the direction of the same architect, by Mr. M. Martin and Mr. James Campbell, of Ballybofey.

A SANITARY MATTER.

A morning journal of Tuesday last announces that at a meeting of the governors of the Meath Hospital on previous day the registrar of the hospital reported “that the new cholera sheds were nearly completed, and would be ready for patients in a day or two, and that Mr. Draper, Mr. Byrne, and other members of the Board of Guardians, were unremitting in their exertions to have them completed and provided with gas, water, and sewage!” If such be a fact the early attention of the sanitary police sergeants would be very desirable at the “Long Lane” hospital.



Engraved by J. H. P. & Co. Dublin. Oct. 1866.

♦ RESIDENCE ♦ THE GLENTIES ♦ CO. DONEGAL ♦

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THE CONSTRUCTION OF LARGE GRANARIES.

GREAT granaries are probably not now, in England at least, of the vast importance that it was once thought they must become, as one of the indispensable implements of that which is at once the heaviest carrying trade in the world and the most directly important to mankind—the great trade in corn.

But the means of storing for longer or for shorter periods vast masses of grain will never cease to be a matter of moment; for however much the abolition of the corn laws and free trade, with our increased powers of transport by sea and land, and the ever-growing breadth of new sown corn land in America and Australia, &c., have already and must continue to equalize the fluctuations of price due to climate and bad season, &c., there will always be countries where it would even be the part of governments to preserve great magazines of grain against times of recurring famine, and where even private merchants might *perhaps* find it worth while to do so; in addition to which the warlike requirements of great military powers will always make the temporary accumulation and preservation, for longer or shorter periods, of great stores of grain, indispensable to them. In addition to this, it may be said that a really efficient system of storing grain on shore is almost a needful complement to our means of bringing it by sea from great distances; for the grain, always more or less injured in the ship's hold, or set into a state to be afterwards injured, is thus capable of being restored to its safe condition, and, in a word, of being rendered a more merchantable article.

We have often wondered in what sort of granaries it was that Joseph (Pharaoh's prime minister) stored the grain of Egypt during the seven years of plenty, when the quantity was so large that at last "he left off numbering." Assuming the narrative historically true, it is well enough known that so dry is the atmosphere of Egypt that almost any dark receptacle will there keep grain sound and free from maling for an indefinite time. But in *great* masses the grain must be moved and turned over now and then, or microscopic fungoid growths commence, and it gets musty. This may have been done in Egypt by plenty of slave labour, perhaps.

In fact, so well does grain in any moderate volume keep in a dry climate, that some forty-five years ago or so, there were discovered at Malta a number of the *Pozzi* or oven-like receptacles in which the knights of Malta maintained their supplies against the chances of siege. Some of these were found full of perfectly good and sound Egyptian wheat, which there was reason to believe had been stored there for more than 400 years.

But in more northern and damp climates these simple methods of storage do not answer—grain to be kept in any quantity must be ventilated freely, dried when necessary, and turned over continually. With these facts well known it is one more wonderful instance of the way in which old notions cling in practice, to find that the large granaries built by some of our great railway companies within even a few years past, consist simply of so many wood-floored lofts, and that the corn is turned over with the shovel by men's hands, as it was 200 years ago.

There are many parts of India in which the establishment of great rice granaries would be the means of saving the lives of tens of thousands—as at the present moment in Orissa. With another view, namely, that of affording the means to merchants of housing and drying their grain upon a great scale, and putting it into a fit condition for shipment, and delaying shipment to suitable times, after the wheat has come down the Vistula from Poland on the rude rafts on which it is transported from the great corn-growing plains of the interior—the Russian government has within the last few years constructed some enormous granaries at the mouth of that river, as well as at its junction with the Narev and Bug. We have not been able to learn what mechanical arrangements, if any, have been therein adopted for turning over the grain. Many years ago, too, the elder King Bomba of Naples caused to be constructed just outside the *Porta del Carmine* at Naples (near where Mr. Guppy has established his iron works), an enormous range of *Granile*, or granaries: these are now used as barracks for Bersaglieri.

The policy of their establishment is said to have been based upon the view, that by investing the state money or his own royal funds in corn in cheap years, and here preserving it until times of dearth or of dearth, his majesty would be able to make a handsome profit from his needy and starving subjects, under pretence of helping them in their necessity—a truly characteristic trait of the paternal notions of these imbecile hereditary tyrants. With the exception of some arrangements for hoisting the grain, these *granile* are nothing but vast lofts, divided by walls and staircases. They never answer their

purpose, nor even were fairly tried; for the same folly and baseness that suggested the project, always kept Bomba's pocket so poor that he never could or would spare capital enough to fill his stores.

The Austrian government, also, before the late war, had commenced the construction, upon a very grand scale, of granaries for military purposes at Bruck and at Verona—each of these being capable of storing from 30,000 to 40,000 quarters of wheat. One of these granaries, that at Verona, has been examined by the military correspondent of the *Times*, who has given a clear and lively sketch of the arrangements, of which the following is an extract:—

"In spite of her deficiency in funds, Austria manages these matters in a truly imperial style, and the provision stores and bakeries, which I visited yesterday, are well worth attention, though they are not quite finished, and have not yet disburdened the impromptu granaries of their unaccustomed stores."

"Near the Porta Vescovo certain buildings have been erected by the military engineers, showing, like all Austrian military edifices, considerable architectural grandeur, and containing huge receptacles for grain, together with all the arrangements necessary for supplying fresh bread daily for 40,000 men."

"Every one knows how difficult it is to preserve grain for a long period from damp, worms, rats, and other 'small deer,' and a system that will effect this is worth much expense when this is compared with the value of the lives that depend on a due supply of wholesome food. The reservoirs intended to contain the corn are 130 in number, each of them being 42 feet (Austrian) in height and 7 square, made of iron plate pierced with small holes all over its surface. A hollow cylinder of the same metal, also pierced with holes, runs up the centre of each reservoir, and communicates at the bottom with a tube through which a blast of air can be driven by a fan when required. I was informed that each reservoir will contain 1000 measures of 45 lb. When a new supply of grain is to be brought in it is run into the establishment in railway trucks, and the sacks are emptied into square receptacles consisting of large iron boxes let into the ground, and from this time forth the food is touched by no hand of man till it is taken hot out of the oven in the form of the excellent bread supplied to the soldier. To carry the corn to the top of the reservoirs an endless leather band, covered on its exterior surface with a number of small buckets, is employed. The apparatus on this principle most familiar to the general reader is probably the machine used to clear the channel of a river from mud. As the band revolves by the action of a steam-engine each bucket scrapes up its share of grain and conveys it to the top of the house, dropping it into long iron troughs, which pass over the tops of all the reservoirs."

"In each trough works an Archimedian screw, which passes on the corn without ceasing to its furthest end, or drops it into any selected reservoir by the opening of a small door in the bottom of the trough. There is, of course, a door above each reservoir. When one is filled its door is shut and the next opened, and so on. If the wheat or oats are dry and clean when put in, the natural circulation of air through the centre shaft and the holes in the exterior of the iron reservoir cases is sufficient to preserve it for some time; but if more drying is needed, or if it be required to guard against worms, &c., the top of the centre is closed and air blown into it from underneath. The draught having no means of exit except through numerous small holes, is thus driven through the corn, and not only dries it but creates such a vibration as to render the life of any worms that may be in it such a burden to them that they cannot enjoy domestic ease nor bring up their young, but are driven, Tantalus like, to despair in the midst of plenty."

"But even this is not considered sufficient. The great weight in each reservoir might cake some of the corn at the bottom, and in any case a little circulation is good for it, so shutters are provided at the bottom of the reservoirs near the ground to let out the corn when necessary. Spouts under the shutters convey the grain into troughs with Archimedian screws, and these lead it, tumbling over and over, to the endless band and buckets which rise it again to the top, where it goes through the usual routine, having been well mixed on its way. Then there are steam mills for grinding, steam apparatus for mixing the dough, and small carriages to run the bread into the ovens, of which there are twelve."

Although the form of description shows that the writer is not very familiar with "elevators" and "screw creepers" and such like now commonplace gear of our well appointed corn mills, as here employed for another though analogous end, still the sketch is clear enough.

In reference to it the secretary of "The Patent Ventilating Granary Company (Limited)," 16 Corn Exchange Chambers, London, has addressed a letter

to the *Times*, in which it is stated that those Austrian granaries have been constructed upon the system patented by M. Alexandre Devaux, of 62 King William Street, City, whose patent, it seems, has been made over to this company, by whom a granary upon the plan has been erected at Rotherhithe, capable of holding 50,000 quarters. It is added that since this granary was opened in the June of last year, its value has been tested in bringing into good condition, quickly and cheaply, parcels of grain arriving after a long sea voyage in heated condition, as well as by well storing sound grain. It is also stated that a considerable granary of the same sort has been erected in Liverpool, and that one of the great capacity of 100,000 quarters has been constructed at Trieste by the Lombardo-Venetian Railway Company, which is working satisfactorily.

All this we should be prepared to expect from the system described, and are glad to learn; but we must take leave to express our great doubts as to there being any patentable novelty whatever in M. Devaux's arrangements.

The principle upon which they rest, or, to speak more exactly, the general ideas which have been patented and carried out by M. Devaux, appear to have been completely anticipated years since by one of the most inventive men who have settled from abroad in this country, Mr. John George Bodmer, mechanical engineer, well known for his many and highly remarkable improvements in tools, spinning and weaving machinery, &c., &c.

Mr. Bodmer's notions were not mere generalities casually uttered; his plans for mechanical granaries for the storing and preserving of grain were fully matured, and in the form of complete working drawings were, with an ably written memoir, presented to the Society of Arts, Adelphi, in 1845-46; and an abstract of the memoir, together with engravings of his drawings, have been published in Newton's *Patent Journal* for 1846, and we believe also in the Transactions of the Society of Arts.

Mr. Bodmer there states that as long ago as 1817, being in the German public service, he proposed the erection of granaries composed of large slowly revolving iron cylinders, with radial vanes projecting internally to turn over the grain. This plan, which we may mention has been in various forms proposed by different inventors, appears never to have been carried out for granary purposes, though the same sort of apparatus has been advantageously employed in corn mills (as suggested by Bodmer) for "scouring" and moistening the skin of wheat before its being delivered to the "shelling stones."

M. Vallery, a French engineer, improved upon this plan, and it appears executed some large granaries upon his designs, and it is said to have answered well by a M. Thomas, who officially examined and reported on the arrangement, some short time after 1836. One portion of the plans both of Bodmer and Vallery consisted in the introduction of a fan blast into the interior of the large cylinders, to which latter slow revolution was at intervals given to agitate the grain.

It we be not mistaken, parties connected with the corn trade in Ireland, about twelve or fifteen years ago, became interested in arrangements both for storing and for cleansing grain of a character very analogous to the preceding.

M. Thomas has published a very valuable compilation of statistical information, embracing the whole subject of the bearings of fluctuating harvest upon the storing of grain, the cost of storage, loss in turning over, &c., &c.; and prior to 1845 had proposed the formation of granary companies for the storage of grain on M. Vallery's plans all over France. One very curious fact (if fact it be, for a large basis than France and Central Europe) deduced by M. Thomas is this, that upon the average deduced from a long series, in every seven years there are two very good grain harvests, four average ones, and one bad one. To those who may be specially interested, we commend the perusal of M. Thomas' work, now, we believe, scarce.

Mr. Bodmer described to the Society of Arts three distinct forms of mechanical granary—namely, 1. His revolving iron cylinders and air blast; 2. A plan whereby a ladder of elevating buckets, driven by power and arranged in framework, was made to traverse slowly from end to end of a large, lofty, and long loft, picking up the grain from one side of a great continuous heap, and dropping it behind into a heap again, as the machine advances upon rails on top of the side walls like a traveller crane. The greatest depth of corn here was limited by the angle of repose of the grain to about 30 feet. The floor of the granary thus arranged was intended to be perforated, and to deliver streams of dry air into and around the grain.

The principal and really most valuable of Mr. Bodmer's arrangements is, however, the third. According to this, the granary consists of a vast rectangular cancellated building of brickwork, con-

sisting of double ranges of square bins or chambers, each 60 feet square, and 60 to 70 feet deep, open at top, but formed at bottom into the shape of an inverted frustum of a four-sided pyramid. Each such bin holds 22,000 quarters of grain, or the whole granary of 35 such as shown in the drawings, 800,000 quarters. The brick divisions of these bins terminate above level with the outer walls, upon which a roof rests covering the whole, but leaving free circulation over all the bins. These bins are arranged in double rows, back to back, and between every second row a narrow alley is preserved from top to bottom. In this traverses a chain of buckets, which is so arranged that it can take up corn discharged from the shoots and apertures provided in the hopper bottom of any one bin at either side, and discharge it back over the top into the same bin, or into any other of either range. Without figures in illustration, it would be useless to go into the details of Mr. Bodmer's machinery for effecting this.

Beneath the brick arching and piers, constituting the hopper-shaped bases of the bins, runs a complete system of air flues, all leading into one common termination, where means are provided for warming and drying air in great volumes, and driving it by power (fan, blast, or cylinder) through the grain and all about it.

Such is very briefly Bodmer's plan; and unless the substitution of iron for brick in the formation of the bins is to be viewed as essential, we do not see much in which it does not anticipate M. Devaux's arrangement.

Unless it be a fact that the mere contact of live grain with dry brick or plaster has a tendency to make it grow, owing to the *earthly* character of such wall material, to a greater degree than contact with metallic iron, we are unable to see any special advantage for this use of iron over brickwork; and structurally we should much prefer the latter upon a large scale. We are not aware whether any experimental knowledge exists as to the facts of this question of botanical physiology, upon which, therefore, it would be vain to speculate. We should not beforehand expect any difference in effect on the grain, the iron and the brick being assumed both quite dry. The iron cannot *absorb* moisture, which in damp weather the brick may render it latent, until again desiccated out by drier air. But the iron can *condense* moisture, and undoubtedly must do so, and so have its surface coated with moisture at sudden changes of temperature or of hygrometric state of the atmosphere. In our own practice we once found this a formidable objection to the iron ceiling of a large hop store, which it became necessary to sheet all over with wood, to prevent the actual drip now and then of the condensed moisture on the hops.

According to the figures given by Mr. Bodmer, a quarter of grain can be taken from a waggon or lighter into the granary, put upon the heap, turned over 150 times per annum; ventilated by a draft of air the whole time; measured or weighed, and loaded again in waggons or lighters, at the cost of less than 6d. per quarter per annum, allowing 7 per cent. interest for the capital invested. He also states that a granary to contain 200,000 quarters could be (in 1846) constructed at a cost of from £40,000 to £60,000.

The conditions which, in years happily gone by, produced those fearful fluctuations in the price of the staff of life in Great Britain have passed away for ever. One of the great ends contemplated by the formation of vast granaries based upon the old Josephian policy has, therefore, ceased to exist; but, as we have already pointed out, there are other motives that still continue to make the construction of great granaries of the most complete and perfect character important, and sufficiently so to justify the laying before our readers the preceding notice.—*Prac. Mec. Jour.*

Learned Societies' Meetings.

ROYAL IRISH ACADEMY.

The Session 1866-7 was commenced on Monday evening. The president, Lord Talbot de Malahide, in the chair. After reading the minutes, the secretary announced that a vacancy on the Committee of Antiquities, caused by the death of Dr. Petrie, was the only one to be filled up. A ballot resulted in the election of the Rev. Dr. Todd to the vacant post. Sir W. Wilde (V.P.) brought under the notice of the Academy an account of the antiquities of Scandinavian origin, lately found in the fields sloping down from the ridge of Inchicore to the Liffey, and to the south-west of the village of Island-bridge, outside the municipal boundary of the city of Dublin, where, there was reason to believe, some of the so-called Danish engagements with the native Irish took place. These antiquities

consisted of swords of great length, spear heads, and bosses of shields, all of iron; also iron knives, smiths' and metal smelters' tongs, hammer heads, and pin-bronches, &c. Of bronze there were several very beautiful tortoise-shaped or mamillary brooches found, likewise some decorative mantlepieces and helmet-crests of findruin, or white metal; beams and scales of the same material, and leaden weights, decorated and enamelled on top, and in some cases ornamented with minerals. Besides those which were considered to be of Scandinavian origin, there were other articles, especially small desks of embossed work and enamel, found among them, probably of Frankish or Saxon workmanship, similar to some of those in the Academy's Museum. Among the most interesting articles in the collection was a sword handle of bronze, highly decorated in Scandinavian pattern, and inlaid with discs of white metal, which Mr. Clibborn was fortunate enough to procure some months ago from Island-bridge. With few exceptions, Sir W. Wilde believed them to be of what was usually, but erroneously, called Danish origin, but he stated that iron swords of that pattern were rarely found in Jutland, or the countries known in modern geography as Denmark; but similar swords, &c., were found chiefly in Norway and the adjoining coasts of Sweden, and that he believed there were more iron swords of the so-called Danish pattern in the collection of the Academy than had been found in all Denmark. He referred to Dr. Todd's forthcoming work upon "The Wars of the Danes" in Ireland, and complimented the noble President upon the circumstance that, through his instrumentality in procuring the treasure-trove regulation, the Royal Irish Academy was now able, without drawing upon its own very limited resources, to purchase any collection of articles which might be discovered in Ireland, provided such articles were at once brought to the Academy, or forwarded through the constabulary or police. The circumstances under which those osseous remains and the accompanying relics were found was well worthy of consideration. The surface of the great pit from which the macadamization of Dublin was being procured, and which was about twenty feet in section, consisted of a layer of dark alluvial soil, varying from eighteen inches to two feet in depth. Upon the gravel bed on which it rested were found several skeletons, and among those bones, both above and below them, were discovered the different articles referred to. It would appear that they were worn by or were in the possession of the persons to whom they originally belonged, but there was no evidence of interment having taken place, and, from all the attendant circumstances, they were left to believe either that the bodies were buried in all the panoply of war, with their weapons, offensive and defensive armour, decorations, tools, and implements upon them, either hastily, through fear, or according to the usage of the people to whom they belonged, which was not only unlikely, but, from the shallow surface of the soil covering them, most improbable. The other and most likely conjecture was, that these Scandinavian invaders were killed in battle or some sudden skirmish, and lay there on the lightly covered gravel field, on the south side of the Liffey, until the birds of prey picked their bones, and the weeds, grass, and soil accumulated over them during the last eight or nine hundred years.

Mr. H. P. W. Joyce, M.A., read a paper "On Spenser's Irish Rivers."

The following presentations were acknowledged:—A collection of rubbings of ancient Irish tombstones, by Miss Petrie; original papers comprising a correspondence of Dr. R. R. Madden with the late Dr. O'Donovan, respecting literary frauds and forgeries purporting to be prophecies of St. Columbkille, by Dr. R. R. Madden; the Commentary of Simplicius upon the four books of Aristotle, "De Cælo," by the Royal Academy of Science of Amsterdam; Experimental Inquiry into the Laws of the Conduction of Heat in Bars by Dr. James Forbes, by the Author; an essay on the Resolution of Algebraic Equations, by the late Judge Hargreave, by Mrs. Hargreave; Minutes of the Proceedings of the Institution of Civil Engineers, vols. xxiv., xxv., by the secretary; Report of the Progress of the Geological Survey of Canada from its commencement to 1863, by the Commissioners; Report of the National Academy of Science of the United States for the year 1863, by the secretary; Transactions of the Homœopathic Medical Society of the State of New York for the year 1865, by the secretary.

ROYAL DUBLIN SOCIETY.

On Thursday, the 8th instant, the Royal Dublin Society held its first stated general meeting for the Session 1866-7. A lengthened report was read, from which we extract the most interesting portions:—

The council has much pleasure in reporting to

the society at this its first meeting after the recess, the greatly improved condition of the institution, as compared with that in which it has for some time been placed. The representations frequently made to her Majesty's Government for special grants to enable the society to complete its several departments have been at length favorably responded to, and have resulted in a Parliamentary grant, which, when judiciously expended, will render the society more useful to the country, and more attractive to the members. The council cannot but feel that it is of special advantage that the society's funds, which are derived from the subscriptions of members, and other sources than those derived from Parliament, have been freed from any State control, and that the society is at liberty to expend its own money in the promotion of every object consistent with the Charter of incorporation. The immediate effect of this arrangement has been to enable the council to add the leading newspapers to the large collection of periodicals which lie on the table of the conversation room (which is open in the winter season experimentally until ten o'clock, p.m.). But to the agricultural department of the society the arrangement will prove peculiarly beneficial; for the society, no longer obliged to supplement the inadequate grants heretofore made for the support of the library, museum, and Botanic Garden, is now enabled to apply the larger portion of its private funds for the support of a department so important to the country, and which has heretofore been conducted with so much credit to the society. . . .

THE AGRICULTURAL MUSEUM, which is open daily between the hours of eleven and four o'clock, continues to be much consulted by the agricultural public. The recent acquisition by the society of the wax models illustrative of the morbid anatomy of the cattle plague, forms an important feature in the museum, and has been much appreciated by all those especially interested in the subject.

LIBRARY.—The shelving and furnishing of the rooms recently added to the library, and the alterations in the chief room being nearly completed, the members and the public will ere long be enabled to derive the fullest advantages from this important department of the society. In order to obviate alleged objections as to the difficulty in obtaining admission to read in the library experienced by such persons as may be unable to obtain a member's introduction, an alteration has been made in the library rules, and is now in operation, by which the library committee are enabled to admit public readers, upon proper application, without a member's recommendation. The large increase of public readers which is anticipated has rendered it necessary to appropriate the large room for the use of the public readers; and the reading-room lately used by the public will be suitably furnished for the exclusive use of the members. Advantage has been taken of the recent closing of the library during alterations to effect a better classification of many of the books upon their removal into the new suite of rooms, and members who cultivate any particular branch of science and literature will be enabled to study in the rooms specially set apart for works on such subjects. The increase in the amount of the Parliamentary grant, aided by a sum of £100 contributed by the society for the purposes of the library, will, it is trusted, render the library still more useful to the general public, and attractive to the members, the latter of whom have the privilege of borrowing from it a limited number of books. The library, including the munificent donation of Dr. Joly's collection, now contains about 60,000 volumes. The library is open daily (Sundays excepted) from 11 till 5 o'clock; and on each evening (Saturdays and Sundays excepted) from 7½ till 10 o'clock. It will be observed that the evening opening is now extended to two additional evenings of each week. The extra accommodation thus afforded to public readers has been rendered practicable by the additions to the library staff provided for by the increased Parliamentary grant.

SCHOOL OF ART.—The Council has great pleasure in reporting upon the success of this department. Owing to the unremitting and courteous attention, and his skill as a teacher, of the head master, Mr. Lyne, of the art mistress, Miss Julian, and the assistants, the students have highly distinguished themselves during the past year. Thus, at the national competition in March last, 80 medals were offered to the 112 schools of art throughout the United Kingdom. 968 works were sent in from all schools, of which 41 were from those of this society. Medal awards were made to 31 schools, and it will be seen by the following table that our schools contrast most favourably with the other principal schools in the kingdom (exclusive of those in London). Thus:—Manchester school took 8 medals; Royal Dublin Society's School, 7; Birmingham School, 4; Edinburgh School, 5; Glasgow School, 3; Liverpool School, 1; Newcastle School, 1. It is to be observed that the Royal Dublin Society's School is

the only Irish one that has been successful at this competition. The winter session commenced on the 1st of October last, and it is a matter for congratulation that it promises to be in every respect eminently successful.

MUSEUM OF NATURAL HISTORY.—Very extensive alterations, which are at present being carried out, were found necessary to be effected, especially in the roof of the Natural History Museum building; a large extent of glazed cases has been erected. The Museum will, when completed, be opened to the public, free of charge, on Mondays, Wednesdays, Fridays, and Saturdays, from 11 till 3 o'clock, from the 1st April till 30th September; and from 11 till 3 o'clock, from the 1st October till the 31st March; Tuesdays and Thursdays will be reserved for the purposes of arrangement, and for the admission of students producing members' orders. It is also intended to open the Museum to the public in the evenings.

BOTANIC GARDENS.—This department of the society has also been considered in the increased grant voted for its maintenance. New propagating and nursing houses are in course of erection, and the director's residence is about to be placed in repair; the Lords of the Treasury have recommended a further vote to be taken next year, to enlarge the conservatories and palm-house, and to build a Museum of Economic Botany, similar to that attached to the Botanic Gardens of Kew and Edinburgh. The council, desirous to afford the public the fullest advantage of the department, and in accordance with the recommendation of the Select Committee of the House of Commons on Scientific Institutions, Dublin, have caused the garden to be opened much more freely to the public than heretofore. The garden is accordingly open to the public on every day of the week except Monday, which is open only to members and to persons producing their orders; on week-days, from 1st October till 31st March, at 12 o'clock, closing at 3 o'clock, or sunset; from 1st April to 30th September, opening at 12 o'clock, and closing at 3 o'clock, or sunset; the conservatories opening an hour later, and closing an hour earlier than the abovenamed hours. On Sundays the garden is open at 2 o'clock, the conservatories at 2½ o'clock; the hours for closing being the same as for week-days.

The laying-out of the society's lawn as an ornamental garden is in progress; and when the memorial to his Royal Highness the late Prince Consort, which is to stand in the centre, shall be erected, the whole will form a very attractive feature in this part of the city.

The evening meeting of the society, and the publication of the society's journal, will in future be placed under the superintendence of the standing committee of practical science—an arrangement which the council believe will prove beneficial. With all these advantages, and by the steady co-operation of the members, the council feel assured that an amount of public good will be effected even greater than the society has heretofore succeeded in accomplishing.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

The opening meeting of the session 1866-7 will be held this evening at the rooms of the Institute, 212 Great Brunswick-street, when the election of officers for ensuing year, will take place, and the ordinary business transacted. The following gentlemen will be submitted for ballot: as fellow—Thomas Newenham Deane, R.H.A.; as student—Albert Edward Murray; as associates—Henry O'Hara, C.E., and chemist, James Healy. We understand that the proceedings of the Institute since its re-organisation will shortly be published in book form. The papers to be read during the session have not as yet been announced.

ROYAL ZOOLOGICAL SOCIETY.

At the weekly meeting on Saturday morning, the following resolution was passed:—"That the Council of the Royal Zoological Society are of opinion, without entering into the consideration of the details of construction of the proposed tramway from the Winter Gardens to the King's Bridge, that facility of transit which would enable the public to arrive with expedition cheaply at the Phoenix Park, would benefit the public and the Royal Zoological Gardens, which are maintained by public grant and by subscriptions, for the instruction and recreation of the public."

ROYAL HIBERNIAN ACADEMY.

The annual general meeting of this body, for the election of officers, has been held. In accordance with the provisions of the bye-laws, the president can only hold office for five years, and the outgoing president is not eligible for re-election until his successor has held office for at least two years. Mr. Catterson

Smith, who has very efficiently presided over the academy for the last five years, vacated office on the 18th ult., and a unanimous vote of thanks was passed to Mr. Smith for his faithful and efficient discharge of the duties of president. He is succeeded in office by a gentleman who has been for many years intimately connected with art, and whose constant exertions have been directed towards upholding its interests and developing its progress. An architect (Francis Johnston) was the founder of the institution, and an architect again worthily presides over its deliberations. The late elections, which have been confirmed by the Lord Lieutenant, in accordance with charter, are—

President, Sir Thomas Deane; Secretary, M. Angelo Hayes; Treasurer, G. F. Mulvany; Keeper, Henry Macmanus; Visitors to Living Model School, Thomas Bridgford, Thomas Farrell, M. A. Hayes, and Charles Grey; Visitors to Painting School, Thomas Bridgford, Charles Grey, J. R. Marquis, and George Sharpe; Professor of Painting, Henry Macmanus; Professor of Sculpture, J. R. Kirk; Professor of Architecture, J. J. McCarthy; Professor of History and Antiquities, J. T. Gilbert.

The Council for next year are—G. F. Mulvany, B. Mulrenin, G. Sharpe, T. Bridgford, P. V. Duffy, and T. Farrell.

ROYAL GEOLOGICAL SOCIETY.

The first meeting for the session of 1866-7 of this society was held yesterday evening, in the Museum Building, Trinity College, Dr. CARTE in the chair. Mr. Robert H. Scott, M.A., read the minutes of the last meeting. A large number of donations were announced. Several gentlemen were elected associate members of the society, after which Mr. Scott proceeded to exhibit a collection of casts of mammalian specimens from the Darmstadt collection, which had been presented to the society by the right hon. the president. The value of this gift was enhanced by the fact that the casts from which they had been taken were since destroyed. Mr. Scott read a paper by Mr. A. B. Wynne, entitled "Notes on some of the Physical Features of the Ground as connected with Denudation." The paper had reference to the influence which the atmosphere, rain, the sea, and other agencies have had in giving their peculiar formation to the lines of sea-coast, and the various great mountains of the earth. The paper was illustrated by beautiful drawings, executed by the author. The thanks of the society were passed to Mr. Wynne; after which there was an interesting conversation, on the subject. The concluding paper was one by the Rev. M. Close, M.A., "On some Peculiarities in the Phenomena of Glaciation, as indicating the Nature of the Glaciating Agent." This paper was continuation of one read at the previous meeting.

TENDERS.

By Midland Great Western Railway Company, for enclosing West Wharf, Royal Canal, North Wall, up to 20th inst.

By Port of Dublin Corporation for cast and wrought iron work required at Fastness Rock Lighthouse and Blackhorse Rocks, county Cork.

By Commissioners of Cork County Gaol for alterations and additions in prison, according to plans by the architect, W. Atkins, Esq. to 22nd inst.

MISCELLANEOUS.

In sinking a shaft at the Garden tin mine, in Morvah, the men have met with a perfect pillar, about eight inches in diameter, standing, so to speak, in the solid rock, and very different in its composition from the surrounding granite. And, what is stranger still, at the base of this pillar they have come upon what they say is a fly-wheel of the same material. Large pieces both of the pillar and wheel were exhibited to the adventurers at the account meeting on Friday last, and some portions of both are still left unbroken in the rock, that the curious may see for themselves.

THE PLOUGH FIELD.—During the month now drawing to a close no less than seventeen All England Ploughing Matches have been won by men using Messrs. Ransomes' celebrated ploughs, and five of the number by local ploughmen. Four matches have been won this week, viz., Witheridge and Halberton, Devonshire; Stretton, Rutland; and Ropsley, Lincolnshire. The land is now in good order for showing the skill of a ploughman and the quality of a plough, and the work in each district has been the subject of great admiration. The number of All-England prizes (now 76) won by Messrs. Ransome and Sims since September, 1864, certainly speaks well for their ploughs, and their adaptability to all soils in every state of the weather.—*Morning Star*, Oct. 27th.

A project is announced for building, at New York, directly opposite the main entrance to Central Park,

"the largest and grandest hotel in the world." It is to be a family hotel, and therefore will differ greatly from the existing American hotels. There will be 174 private parlours, with one, two, or three chambers attached; more than 600 other chambers for guests, and above 100 rooms for their servants and the hotel establishment. There will be two large main dining-rooms. A grand feature will be the central court, covered with a glass roof, and from which access may be obtained to any part of the building.

Essen, in Rhenish Prussia, will send to the Paris Exhibition a gigantic gun. This piece of artillery will weigh 17,500 kilos. (1,000 kilos. are equal to one ton); discharges a cast-steel projectile weighing 500 kilos., with a charge of 60lbs. of powder. The projectile is a kind of conic cylinder.

A successful experiment has been made at Montreal in smelting iron with peat. The trial was made in M'Dougall's car-wheel factory. The cupola was charged with two layers of iron and anthracite coal. The third or topmost layer was iron and peat. The time was 40 minutes less than with coals alone.

The first evening scientific meeting of the Royal Dublin Society for the session of 1866-7 will be held on Monday evening next. Professor Oswald Heer, of Zurich, on the Miocene Flora of Atanekerdlik, in North Greenland; translated and communicated by Robert H. Scott, Esq., A.M.

A REASON WHY.—At the Newry Borough Court last week a charge was preferred against a woman for keeping a horse in her dwelling-house, and a quantity of offensive matter. She stated to the inspector that she had kept the horse there for twenty years, and had enjoyed the *very best* of health!

CASSELL'S ILLUSTRATED PENNY READINGS, conducted by Tom Hood, Part I.—Another candidate for public favour in an attractive garb, has been issued by the enterprising firm of Cassell, Petter and Galpin. In its pages are to be presented "gems to be found in English literature of all ages." The "Penny Readings" are no doubt well illustrated, and a monthly sipping may well be spent on each part. With the first part is given an engraving of the Trial of Lord Russell.

The Lord Mayor has convened a public meeting to be held on Monday next, at the Mansion House, for the purpose of raising a fund to aid the sufferers by the recent fire in Quebec. It is to be hoped that there will be a liberal response to such a deserving cause.

THE HEALTH OF DUBLIN.—In the Dublin Registration District the births registered during the week ending November 10th, amounted to 146—76 boys and 70 girls. The number in the corresponding week of last year was 171. The deaths registered during the week were 216—103 males and 113 females. In the corresponding week of last year the number was 141. Eighty-two deaths from cholera were registered, being 11 less than the number registered during the previous week. Of the deaths from cholera, 68 occurred within the Municipal Boundary, 4 in the Donnybrook District, and the remaining 10 in the Kingstown District; there was not any death from this epidemic registered in the Rathmines or the Blackrock district during the week. Twelve deaths were caused by fever. Scarlatina proved fatal in 3 instances. One death each from measles, diphtheria, and whooping cough was registered. Thirteen deaths were ascribed to phthisis or pulmonary consumption. Six deaths from apoplexy were registered, and 8 from convulsions. Twelve deaths from bronchitis, being less than half the number registered during the corresponding week of last year. The Registrar of No. 3 North City District (Blackhall-street) remarks:—"Several cases of Asiatic cholera of the worst type have taken place in Faussaught-lane, Phibsborough, two of which proved fatal. Within a few yards of the houses where the first cases occurred there is an immense heap of decaying vegetable matter, which, in my opinion, renders this portion of the land most injurious to health. At a trifling expense it could be removed to a greater distance from the cabins in this lane, almost all of which are without reses."

TO CORRESPONDENTS.

We shall be obliged by receiving from any of our readers, in town or country, brief notes of works contemplated or in progress.

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MESSRS. EARLEY AND POWELLS beg to announce that Messrs. John Hardman and Co., of No. 1, Upper Camden-street, have resigned the business of Artists, Sculptors, Church Painters, and Metal Workers, in their favour.

Earley and Powells have added to the above mentioned business the Painting and Staining of Windows for ecclesiastical and domestic buildings, under the management of Mr. Henry Powell, who conducted the Stained Glass Department of J. H. and Co., Birmingham for many years.

Mr. Thomas Earley is the only Church Decorator living who was taught his profession by the late A. Welby Pugin.

E. and P. being thoroughly practical men in each Department, are enabled to supply real artistic work at a moderate cost. They, therefore, respectfully solicit the patronage of the Clergy and Gentry of Ireland.

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TESTIMONIALS.

From WILLIAM TITE, Esq., M.P. for Bath, and Architect of the Royal Exchange, London.

House of Commons, 2nd March, 1864.

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Messrs. White & Son. (Signed) WILLIAM TITE.

From R. O. MINNIE, Esq., Surveyor to Board of Ordnance, London.

War Office, Pall Mall, London, S.W.,
3rd March, 1864.

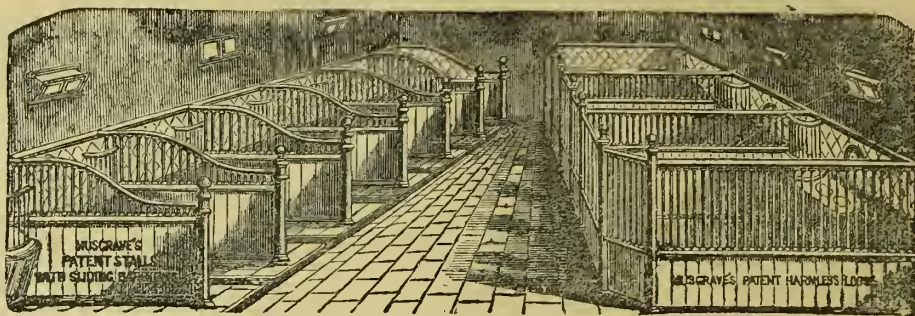
GENTLEMEN,—In reply to your request, I have much pleasure in stating my favourable opinion of the quality of your Portland and other Cements, which have been extensively used in the Public Works connected with the War Department at home and abroad, especially in several of the fortifications now being erected in this country. On all occasions within my knowledge the quality has been equal to that of any other manufacturer, and has given great satisfaction.—I am, gentlemen, your obedient servant,

(Signed) R. O. MINNIE, Surveyor.

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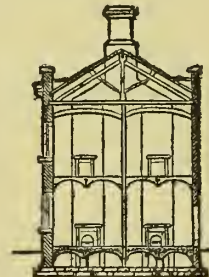
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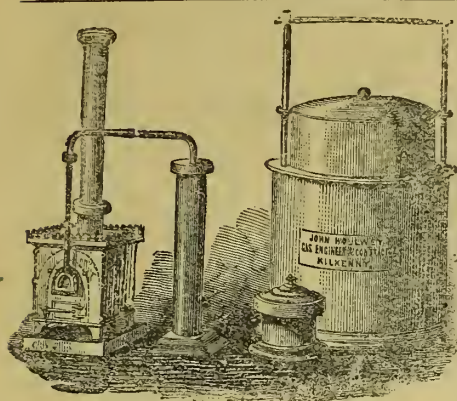
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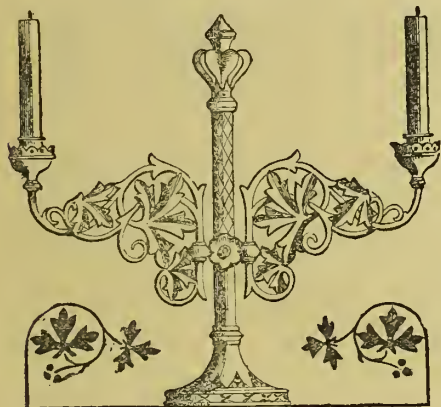
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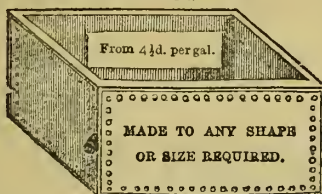
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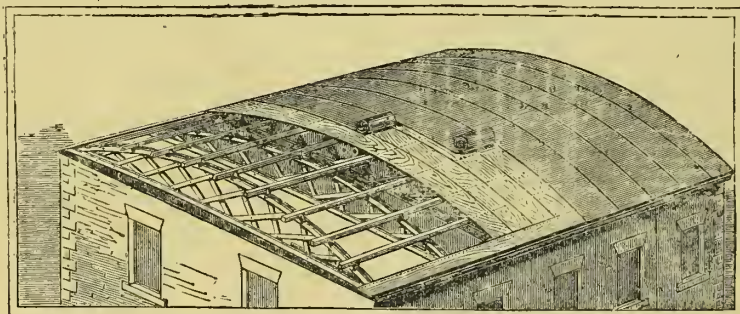
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VOL. VIII.

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The works to be in accordance with the Drawings and Specifications prepared by JOHN HILL, Esq., County Surveyor, to be seen at the Office of the Local Inspector.

The contractor will be required to give security in double the amount of his Tender for the due execution of the Contract, and name two persons in the Tender to be approved by the Commissioners willing to join in a bond for the purpose. The Commissioners will not be bound to accept the lowest or any Tender.

Sealed Proposals addressed to ROBERT GUNNING, Esq., Local Inspector, Tullamore Gaol, marked on the outside "Tender for Gaol Works," will be taken into consideration by the Commissioners on the day above named. Tullamore Gaol, Nov. 28th, 1866.

TO CONTRACTORS AND BUILDERS.

PARTIES desirous of TENDERING for the ERECTION OF CASTLE LOUGH CASTLE, the seat of ANTHONY PARKER, Esq., near Killaloe, County Tipperary, may see the Plans and Specifications relating thereto at the Office of the Architects, Messrs. LANYON, LYNN and LANYON, 64, Upper Sackville-street, Dublin, any day up to 15th, between the hours of 10 and 5.

Sealed Tenders to be forwarded to A. PARKER, Esq., Castle Lough, Port Rule, County Tipperary. No Tender will be received after the 17th December. The quantities have been taken out by Mr. B. T. Patterson, of Great Brunswick-street, and will be supplied by the Architects, who do not hold themselves in any way responsible for their accuracy. A charge of 10s. will be made for each Copy, which will be refunded to each party forwarding a bona fide Estimate.

CONTRACTS.

THE PORT OF DUBLIN CORPORATION

will receive Proposals from persons willing to supply such quantity of the Undermentioned Articles as may be required from the 1st day of January to the 31st day of December, 1867:—

Coals	Chamois
Copper Utensils	Brushes
Tallow Candles and Soap	Sponges
Water Casks	Iron, Steel, &c.
Canvas &c.	Nails, Iron Castings
Cordage, Tar, &c.	Lead and Plumbers' Work
Native Timber	Pig Lead
Foreign Timber	Slates, Laths, &c.
Oils and Colours	Roman & Portland Cement
Lamp Glasses	Yorkshire Flags
Lamp Wicks	Bricks
Rubbers, Towels, Cotton	Lime
Waste	Wheelbarrows
Tinware	Tanned Hides
Ironmongery	Forgings
Norway Poles	

Security will be required for the due performance of the Contract, and the Corporation will not hold themselves bound to accept the lowest or any Tender.

All Tenders to be sent separately through Post, prepaid (none others will be considered).

Tenders to be sealed, and endorsed "the Secretary, Ballast Office, Dublin," so as to be received at this Office not later than Twelve o'clock noon on WEDNESDAY, 5th DECEMBER, 1866.

Printed Forms of Proposals may be had by applying at this Office, between the hours of Twelve and Two o'clock.

By Order, W. LEES, Secretary.
Ballast Office, Dublin, 21st November, 1866.

BOARD OF PUBLIC WORKS.

NOTICE TO BUILDERS.

SEALED TENDERS, addressed to the Undersigned, will be received up to the hour of 12 o'clock, noon, on the 14th of DECEMBER, 1866, for EXECUTING SUNDRY WORKS OF ADDITIONS AND ALTERATIONS to the

CONSTABULARY BARRACKS at MACROOM, COUNTY CORK, according to Plans and Specification to be seen at the Barracks.

Each Proposal should be for a lump sum, and must be accompanied by a separate Detailed Estimate giving Quantities and Prices, and be endorsed "Tender for Constabulary Barracks at Macroom."

Both Tender and Detailed Estimate should bear the Name and Address of the Proposer on the back.*

Printed Forms for Tenders can be had at the Barracks.

N.B.—Persons Tendering should send in Testimonials as to character and competency, unless previously known to the Board.

By Order of the Board,

EDWARD HORNSBY, Secretary.

Office of Public Works,
Dublin, 28th November, 1866.

* If this be not attended to, the Board cannot return detailed quantities to the unsuccessful parties.

MILLARD AND ROBINSON,

Are unequalled for

PHOTOGRAPHS of Buildings during erection, details of same, and finished Structures.

PHOTOGRAPHS of Plans, Drawings, Sculpture, Models, Carving, &c., for publication, contracted for.

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PHOTOGRAPHS of all such carefully and punctually executed by

MILLARD AND ROBINSON,
THE ROYAL PHOTOGRAPHIC INSTITUTION,
43, LOWER SACKVILLE-STREET,
DUBLIN.

MESSRS. EARLEY AND POWELLS beg to announce that Messrs. John Hardman and Co., of No. 1, Upper Camden-street, have resigned the business of Artists, Sculptors, Church Painters, and Metal Workers, in their favour.

Earley and Powells have added to the above mentioned business the Painting and Staining of Windows for ecclesiastical and domestic buildings, under the management of Mr. Henry Powell, who conducted the Stained Glass Department of J. H. and Co., Birmingham for many years.

Mr. Thomas Earley is the only Church Decorator living who was taught his profession by the late A. Welby Pugin.

E. and P. being thoroughly practical men in each Department, are enabled to supply real artistic work at a moderate cost. They, therefore, respectfully solicit the patronage of the Clergy and Gentry of Ireland.

CAMDEN-STREET WORKS, DUBLIN.

PURE WATER.

THE IMPROVED CARBON FILTERS,

invented by MAGUIRE and SON, and recommended by Dr. Cameron, City Analyst, to the Public Health Committee, on Friday, 19th October, as the only really efficient Filter for extracting Cholera virus from impure water, are now being manufactured rapidly. As numerous orders have already been received, MAGUIRE and SON have arranged to execute them according to priority; their customers are therefore requested to order at once. They are also the Cheapest Filters ever made.

No. 1 to Filter 4 gallons per day, 4s. 6d.
No. 2 " 6 " " 5s. 6d.
No. 3 " 8 " " 6s. 0d.
No. 4 " 10 " " 7s. 6d.

IMPORTANT CAUTION.—No Filter contains the genuine purifying medium, as analysed by Dr. Cameron, but those bearing our label.

MAGUIRE and SON, Ironmongers,
10, DAWSON-STREET, DUBLIN.

CERTIFICATE FROM THE CITY ANALYST.

35, Waterloo place, 22nd Oct., 1866.
Messrs. Maguire and Son, 10, Dawson-street, have fully realized my idea of a moderate priced and efficacious Water Filter. Very impure water on being passed through their Filters is rendered perfectly free from all organic impurities.
CHAS. A. CAMERON.

FOR 1867.

THE OFFICE & POCKET COMPANION

for ENGINEERS, ARCHITECTS, LAND and BUILDING SURVEYORS, CONTRACTORS, BUILDERS and CLERKS of WORKS, &c., by W. DAVIS HASKOLL, C.E., the late GEO. RENNIE, C.E. and M.E., and FREDERICK ROGERS, Architect. Cloth, 5s. 6d.

A NEW WORK ON BLAST ENGINES,

illustrated with copper-plates and descriptive text, by H. C. COULTHARD, C.E. and M.E. Imperial folio, half bound Morocco, £3 3s.

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PLASTERERS, SCAGLIOLA and STATUR ARTISTS, ASPHALTE MANUFACTURERS, take contracts in all parts of Ireland, and sell their statuary and house ornaments for reduced prices. Inlaid Caustic Tiles and Tesselated Pavements in great variety contracted for, and Patterns and Prices forwarded if required.

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Sheephouse Quarries, or Office, John-street, DROGHEDA.

Statuary, Marbles, Cements.**FERGUSLIE FIRE-CLAY WORKS, PAISLEY.**

GLAZED SEWER PIPES (Patent and Socket), and all Articles made of Fire-clay of superior quality, for Sale at the Depot,
No. 56, NORTH WALL-QUAY, DUBLIN.
ROBERT BROWN.
Also, **DRAIN PIPES** of all sizes for Field Drainage.
Prices very moderate.

MARBLE CHIMNEYPIECES, GRATES, FENDERS, and FIREIRONS suitable for Drawing-rooms, Diningrooms, Bedrooms, Studies, Libraries, also a number of new Gothic Designs.

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11 AND 12, CORK-HILL, DUBLIN.

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The Halkin Hydraulic Lime is the same as used in the construction of the Liverpool Docks, Manchester and various Waterworks, Collieries, and Mines throughout the country, being so long celebrated for its strong cementitious and connecting powers for Masonry in Water, can be supplied by Rail or Water to any part of the kingdom, either in lump (loose) or ground, and in barrels and bags. The Limestone can be had in full cargoes, also their Cement in barrels, which is of a very superior quality, and warranted pure.

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LONDON PORTLAND CEMENT, and
KEENE'S MARBLE CEMENTS,
Now Sold at greatly Reduced Prices, by

C. LAVENDER,
66½, GRAFTON-STREET, DUBLIN.

TESTIMONIALS.

From WILLIAM TITE, Esq., M.P. for Bath, and Architect of the Royal Exchange, London.
House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have used both the sorts of Cement manufactured by your firm, and that of Messrs. Francis & Son; I mean the Cement usually called Roman Cement, or the more recent introduction of Portland Cement. I believe these Cements, manufactured by either of your firms, to be equally good. I know no difference, chemically or practically, between them; and I should use, and authorize to be used indifferently, either one or the other. You are at liberty to use this note, if you think it necessary.—I am, Dear Sir, your obedient servant,
Messrs. White & Son. (Signed) WILLIAM TITE.

From R. O. MINNIE, Esq., Surveyor to Board of Ordnance, London.
War Office, Pall Mall, London, S.W.,
3rd March, 1864.

GENTLEMEN,—In reply to your request, I have much pleasure in stating my favourable opinion of the quality of your Portland and other Cements, which have been extensively used in the Public Works connected with the War Department at home and abroad, especially in several of the fortifications now being erected in this country. On all occasions within my knowledge the quality has been equal to that of any other manufacturer, and has given great satisfaction.—I am, gentlemen, your obedient servant,
(Signed) R. O. MINNIE, Surveyor.

TO ARCHITECTS AND GENTLEMEN HAVING MAN-
SIONS IN COURSE OF ERECTION.

HOGAN AND SONS, Stucco Plasterers,
General Cement Workers, Modellers, &c., 168, GREAT BRUNSWICK-STREET, DUBLIN, beg leave to state that they are prepared to undertake Contracts in the above line. Ornaments for Cornices & Centre-Pieces for Ceilings supplied. FRONTS OF HOUSES done in Portland or Roman Cement. Materials supplied.

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N.B.—Pattern Cornices enriched, on view at the Establishment.

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These are, in every respect, superior to any other White Brick manufactured.
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INSURANCE BUILDINGS, VICTORIA-ST., BELFAST.

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THE TRADE ARE RESPECTFULLY INFORMED THAT THE
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MANUFACTURED BY
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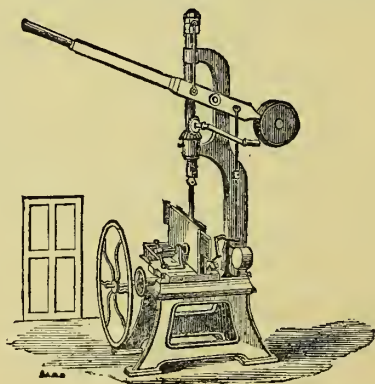
Gentlemen who cannot inspect these fittings are requested to write for engravings, as they are unlike those of any other maker, and were admitted to excel all the work of their class in the Exhibition.

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FOR PARTICULARS ADDRESS—

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REMOVED FROM BLACKFRIARS ROAD.

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WOOD-WORKING MACHINERY.

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P. J. and Co. call especial attention to their **NEW COMBINED ENDLESS BAND and JIGGER or BETTY SAW MACHINE** (patented in GREAT BRITAIN, FRANCE, BELGIUM, &c.), by means of which either the **ENDLESS BAND** or **UP and DOWN SAW** can be used in the same Machine, and is invaluable to those who have **FRET** or **INNER WORK** to do, which the Endless Band alone will not perform.

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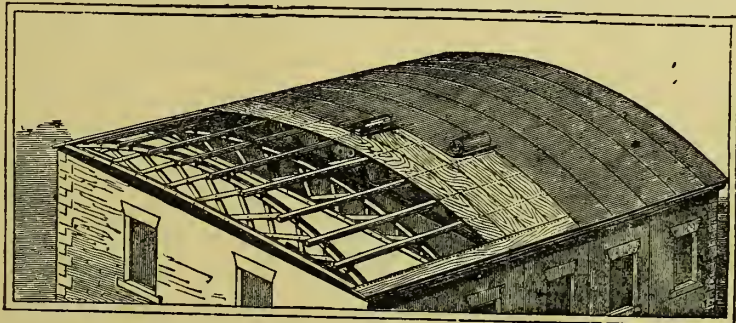
Aquariums, with Slate or Marble Bottoms, of various sizes, with or without Fountains, also of Glass.

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Irish and Foreign Marble Busts, Figures, Models, Chimney-Pieces, Monuments, Tombs, Headstones, Table Tops, and Printers' Imposing Stones, &c., manufactured at nearly half the usual prices. Old Monuments, Tombs, and Headstones, cleaned, polished, and lettered the same as new. Work supplied to all parts of the Kingdom.

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Monuments " " " " " " " "	from £5 to 40 0

All of the very best Limestone. No bad Stone used.
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BENSON'S WATCHES in Sizes of Half to Three Inches in Diameter.

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JEWELLERY, GOLD, for MOURNING WEAR, in great variety.

SILVER PLATE, designed expressly for PRESENTATION.

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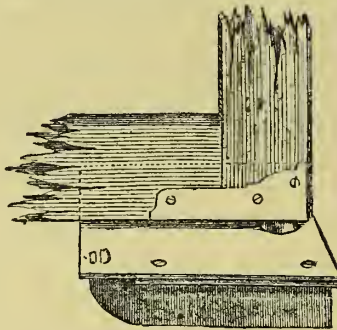
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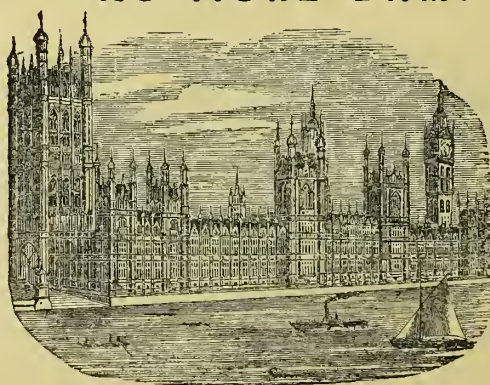
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The Dublin Builder.

VOL. VIII.—No. 167.

THE NEW PARISH CHURCH OF ST. ANDREW.



IF any of our readers should have a doubt on his mind concerning the advancement and progress of Architecture and its subsidiary arts in the City of Dublin, let him stand in College-green, and look down Church-lane, and he will there see abundant evidences, diversified and suggestive, of a prosperous art. Looking down Church-lane, the spectator has on his right the new Union Bank, a noble building, remarkable for the freedom and vigour with which it has been treated; on the left a Jacobean edifice, erected by the North British Insurance Company, concerning which we may remark that it suffers very considerably by its contiguity to its neighbour (suggesting, as it does, a comparison between the two); and immediately in front—terminating the view in that direction, placed, as it is, at right angles to the direction of Church-lane—is the fine new church of St. Andrew, looking most picturesque to one in the position we have described;—three buildings vastly different one from the other, not only in design, but in the purposes for which they have been erected. As we were “musing here an hour alone” on a recent cold grey afternoon, it occurred to us that a few criticisms on any of these edifices would prove interesting to our readers, and with this object in view, we cast another glance at the trio to determine which would be the subject of our remarks. The broad massing and exquisite detail of the Union Bank, displaying power and gracefulness in every line of it, had almost decided us in its favor, when, looking southward, St. Andrew’s appeared to us more lovely than ever—solemn and impressive in the already darkening light, with the highest point faintly lighted up by a few straggling rays of the expiring winter sunshine—so we resolutely walked past the Bank, and found ourselves under the shadow of St. Andrew’s.

The old adage says (and truly, too) “it is an ill wind that blows nobody good;” and even the breezes that fanned the flames to burn down old St. Andrew’s—or, as it is better known, the “Round Church”—does but verify the maxim at least to the architectural mind, since it has been the means of giving us what may be considered perhaps the finest church erected in Dublin for the purposes of Protestant worship, instead of the cumbrous and inconvenient structure which preceded it; indeed, we should be tempted to exclaim *felix culpa*, were it not for the historic associations connected with the old church.

It will be in the recollection of our readers that the original design for this building by Messrs. Lanyon, Lynn and Lanyon, was of an exceedingly beautiful and ornate character. It was selected in competition as the best of many—several of them by architects distinguished for their attainments in ecclesiastical art, but, unfortunately, as is too frequently the case with competition designs, in

order to suit their plans to the finances at the disposal of the churchwardens, the architects have been obliged to omit many attractive features. Perhaps the best view of the church (which consists of nave, north and south aisles, transepts, chancel, organ and robing chambers, tower, vestry, &c.) is the one presented to the spectator looking eastward from the direction of Trinity-street. From this station point can be observed the western end of the church—the well marked transept, the picturesque cloistered porch, and the pretty turret which, nestling in the angle formed by the junction of the transept and north aisle towers with an airy gracefulness above the sky-line, to use a familiar expression, “amid sailing birds and silent air”—the *tout ensemble* forming in truth an excellent composition.

There are some matters of detail about the western gable which we do not altogether admire. The tympanum over the double doorway is too much cut up by ribs, thereby destroying the breadth of effect; and the buttresses at either side of the entrance—surely such immense depth as has been given to them is not essential for structural purposes? certainly the appearance is not benefited by it.

As we come up Suffolk-street the aspect of the church is not so satisfactory as from the other point of view, as it is in this, the eastern, end of the church where the process of mutilation has been most practised (for the purpose of reducing the amount of expenditure). The apsidal termination to chancel rises up stiffly, without buttresses or pinnacles; and, externally, we consider it the least satisfactory portion of the building. At the termination of apsidal roof is a small cross, utterly unworthy the position it occupies. The completion of the tower, with its deeply shadowed belfry stage and the lofty spire, rising to a height of nearly 200 feet (we believe these works will be proceeded with immediately) will, no doubt, add considerably to the effect of the eastern end.

Entering the church through the western door, the effect of spaciousness which impresses one is of a highly pleasing character. The nave is four bays in length, having molded arches, stone columns, carved capitals, &c.; it is about 30 feet in width, and reaches the altitude of 72 feet to the ridge of roof. It is roofed with an open timbered hammer-beam roof boarded on under edges of rafters. All the roofs have been stained of a dark color, contrasting well with the light tint of the walls. The stain used throughout is Swinburn’s. There is a lofty clerestory, well lighted by two-light windows, one to each bay. The space between each window is relieved by a small column carrying the feet of principals and resting on corbels at the level of the molded string beneath the windows. The nave arches are well proportioned, having the angles cut off by a broad muscular double chamfer, which accords not well with the more delicately treated hood moulds over. The carving to capitals of nave columns (by Mr. Harrison) is very fair, but wanting in sprightliness and vitality; and as for the base mould to columns, we consider it the worst bit of detail in the entire building.

The disposition of the numerous arches about the intersection of transept with nave and aisles, the arch at either side of chancel ditto opening from transepts respectively to the organ chamber* and robing-room, and again from these places to that portion of chancel appropriated to the choir fitted up to

half their height with well designed and executed screens, impart an air of extreme lightness and grace to this portion of the building.

The chancel steps are brought out beyond the line of chancel arch some feet, blocks being raised at either extremity of them for the pulpit and reading-desk, which, by the way, are excellent specimens of Gothic carpentry, both as to design and workmanship. The chancel itself is terminated in a semi-octagonal apse with a waggon-headed ceiling, having curved principals (with herring-bone sheathing between them) resting on corbels whereon are carved figures of angels bearing scrolls, &c.

The walls of chancel are decorated as high as string under windows in a simple, chaste, and effective manner—two tints only being used, and a marginal pattern in black and white. On the string itself a suitable inscription has been painted in letters of black and red. There is a quietness of tone about this painted decoration very commendable in a building like the one under consideration, which is conspicuous for its absence of colored material. The chancel floor is raised three steps above level of nave, and the sanctuary, or that portion within the communion rails, is two steps higher—all laid with encaustic tiling in well-arranged patterns.

The entire available space of the church has been fitted up with seats intended, we understand, to accommodate between 700 and 800, and in short, all the arrangements for the accommodation and comfort of the congregation are of a character to leave nothing to be desired.

We must not omit to notice the carving by Messrs. Earley and Powells, of Camden-street, who are so well known for the superiority of their decorative work of every kind; nor to mention that the decoration on the walls of chancel is also due to them. An elaborate crocketed mural tablet recording the names of donors to the erection of the north aisle and adjacent cloister porch has been executed by them, and fixed in the west wall of the north aisle. While making our hurried inspection we had the pleasure of seeing two artists from their establishment, engaged on the carvings at the western doorway, and we could not fail to be very favorably impressed with their handling of the subjects, one of which, a life-sized head of St. Andrew, deserves special commendation, betokening considerable artistic power on the part of its executant. To notice the work of men who evidently possess a thorough knowledge of, and love for their profession, affords us very sincere pleasure. The gates and railing for enclosing the building are also from the workshops of Earley and Powells, and although they have not been fixed in their positions, we have seen them, and can say truly that they are of superior workmanship and design.

The name of Skidmore (Coventry) is a sufficient guarantee for excellence of work in his special department, and on this occasion we need do no more than say that the gasaliers and standards supplied to St. Andrew’s fully sustain his reputation.

The church is warmed by hot water on Hodges and Sons’ improved principle. The pipes in nave, aisles, north and south transepts and chancel are placed horizontally under level of floor in brick channels, covered with open metal gratings. In robing-room and organ chamber the pipes are underground in coils or stacks; there is also a single pipe placed next the wall round the entire building, these are all connected with one of Hodges and Sons’ Slow Combustion Vertical Tubular Boilers, so constructed that the fire will burn for

* A neat organ has been put up by Berington, of London.

twenty-four hours, or even longer if necessary, without requiring to be looked after, thereby saving the expense of a night attendant. and the admission of air for combustion is so completely under control that the temperature of the building can be regulated to the greatest nicety; the plan adopted for feeding the channels in which the pipes are placed with pure air, is worthy of attention: at the west end of the edifice there are two large openings to the external air, connected with large air flues running under the brick channels, with apertures at frequent intervals into said channels, and similar openings in north and south transepts and chancel; these air flues are carried throughout the entire church wherever the pipes are laid, thereby securing that great desideratum when heating a large building, *i.e.*, a plentiful supply of fresh air, this air becomes heated in passing up through the brick channels under the piping before being diffused through the church, thus producing a wholesome and equalized atmosphere. The quantity of air so admitted is regulated by sliding balance doors to suit the required temperature inside accordingly as the external temperature may vary. We are happy to be able to state that the work of the above-mentioned firm has proved after frequent trials thoroughly satisfactory, and we may congratulate the churchwardens on having had the building so efficiently warmed by an enterprising local firm; it is a subject for congratulation that their church has been satisfactorily heated by an enterprising Irish firm, while recently, for the heating of a large public building it was considered by the directors that to obtain a satisfactory system of heating, it was necessary to cross St. George's Channel, and the result is, we understand, a failure.

Yesterday took place the solemn opening of the new church of St. Andrew, and we can offer our congratulations to the architects, Messrs. Lanyon, Lynn and Lanyon, and to Messrs. John Butler and Son, the builders, on the satisfactory accomplishment of their exertions to have the building in a state of completeness for the ceremony.* St. Andrew's Church is an honor to its eminent architects, for the artistic skill displayed throughout the entire edifice, and to its builders, for the very efficient manner in which they have carried out their instructions.

To conclude our hastily-written remarks, we have to thank the junior member of the firm of Lanyon, Lynn and Lanyon, for his kindness and courtesy in affording us every facility for an inspection of the church. In the foregoing observations we have endeavoured to bear in mind that true criticism consists of an impartial judgment of works by their merits alone, without regard to the sympathies of the critic, and a fearless and independent expression of opinion.

CANADIAN SCENES.—V.

At the close of the summer of 1859—within six or eight months of my departure from Canada for Spain—I made one of a yachting party from Quebec to the Lower St. Lawrence. The Messrs. S—n were the parties to whom the yacht belonged, and we purposed visiting the Saguenay and Esquimaux country, should the continuance of fine weather prevail, taking in Kamouraska and Rivière du Loup on the south shore on our trip downwards.

We laid in a good supply of the necessities of life, as we thought we should be at least three weeks out. I had my gun and corncob in hand, there being an expert boatman

in charge of our tiny craft; he was a French Canadian named Louis Lamontagne, who gave us every satisfaction, except at times when he was prone to the free use of brandy and water.

About thirty-five miles below Quebec, after having passed by the Isle d'Orleans, we perceive Grosse Isle on our left, and the wreck of the "Canadian" steamship, with her bow out of water, her abaft part being completely submerged.

The river St. Lawrence here becomes very wide, and dangerous to navigate, from the shoals and rocks being rather poorly lighted, in this locality in particular.

Meet with the little steamer Kamouraska, well laden, with the habitant, his pigs, and poultry for the Quebec market.

Our skipper (Lamontagne) was the picture I'd wish to draw were I gifted with the pen of a Cooper or a Scott; he was like all his countrymen on the Lower St. Lawrence, bred to the sea, and felt not well when he was not rocked to sleep on the billows of that noble and gigantic estuary. He was a lively offshoot from Gaul, a merry *pauvre diable*, very fond of singing those *chansonnettes* of the mother country, La belle France, or the even lighter and more nonsensical, but at the same time pretty and musical Canadian ballads, the refrain of one of these ditties ended with—

"Gai, lou la, la roseir—jolie moi de mai."

Our coxwain was dressed in rather *outré* and picturesque style: his tunic was a sky-blue blanket made *a la Capucin*, the piping and epaulettes of scarlet—the latter being ornamented with various colored beads; he had a Spanish red scarf about three metres in length wound round his waist, with the sailors' couteau reposing quietly in its pouch; his cap was the *bonnet rouge*, and his boots were of the simplest design of mocassin worn by the Indian.

I had my gun at hand, and amused myself occasionally on the cornet with those airs which enliven one when they recollect those songs which Russell composed lately in reference to our wars with Russia, &c.

About ten miles farther down the St. Lawrence, call at St. Anne's del a Pocatiere, where there is a large French Roman Catholic college, the students numbering about five hundred; the English mathematical chair is filled by a gentleman from this country, named Malone, who was glad to see us, and gave us a hearty welcome and a *carte blanche* to the college, introducing us to the dean and fellows of that respectable institution.

From St. Anne's to Kamouraska is about one league farther down. Along the shore here may be seen flocks of sandpipers and grey plover, who darken the air as you approach them: I killed as many as twenty at a shot; the snipe also are numerous about these marshes, and is the same bird as regards size, &c., as with us in Ireland; the woodcock is scarce in this part of Canada, and not more than half the size as with us at home. Great flocks of black ducks, wiggon and teal, with outards (wild geese) inhabit those solitary tracts, and the bitterns' lonely call is heard by the sportsman on these deserted wastes.

Called at Kamouraska *en passant* on an old colleague of mine, of W. and L. R. celebrity; my friend, I need hardly say, was delighted to see me. F. A. D—e was somewhat amused at the piratical cut of the craft and the *outré* turnout of our skipper, &c. My companions, the S—n—s, were certainly worthy to be the owners of such a yacht as "La belle Marthe." H— was enveloped like

Dick Hatterick in a gaberdine of bears, with a cap of the silver fox skin, a girdle about his waist, in which was a dagger and a case of pistols; a pair of waterproof great boots made our hero look quite formidable. His brother C—t—e was not quite so terrible a picture: he attended particularly to the sailing qualities of his boat, and remained almost always ready to take in a reef and lower a sail when a squall would visit us—a thing of frequent occurrence hereabouts as we hug the north shore of the river;—he remained most of his time barefooted, with coat and vest thrown aside. This was the smartest young fellow I met in this country—nothing could daunt him,—and he was as active as the fawn.

It was as dark as Egypt or Erebus when we left Kamouraska: D—e wondered at our fool-hardiness at not staying over night with him; the tide, however, was on the ebb, and Eolus favouring us, we thought it advisable to make the Basques before daylight about thirty miles across the river; when we got about midway I discovered signs in the heavens of the approach of Phœbus, knowing well he would make his debut as suddenly as he made his exit last evening.

The seals are quite numerous and large about this part of the river: S— comparing them to such and such a person, according to the old and venerable appearance they would present at times. I had almost shot off my hand at Isle Blanc when charging my gun after hastily firing at an old grey-headed seal whom Harry S— dubbed Grison L—, being not unlike an old senator whom we used to see attending parliament in Quebec.

On the tide flowing in the morning, heard in the distance the measured blowings of a shoal of white porpoises who come up the gulf of the St. Lawrence as far as Kamouraska, and return with every ebb tide. I saw large spaces on the strand partly enclosed for the purpose of capturing these porpoises, and parties on the south shore make a livelihood of the oil of this animal.

Those *marsoin*, as the French call them about here, are twice, some three times as large as the porpoises that infest the shores of Europe; they have skins as white as snow, and form quite a novel scene to the European when he sails up the St. Lawrence.

I felt anxious to explore Isle Rouge (Red Island) opposite the embouchure of the Saguenay river: it has no place of shelter, not even for the fox or bear. On the summit of an almost inaccessible cliff I discovered what seemed to be a signal post that had probably been erected by some shipwrecked mariners who had sought refuge on its inhospitable shore. On the top of this pole—a tall straight tamarac (larch) tree—floated still the remnants of a red silk pocket handkerchief. Perhaps it was here that Mrs. W—r—n, my cousin, was wrecked some years before, when the steamer "Clyde" was lost.

As day advanced, Lamontagne struck up one of his light French *chansonnettes*, and we made across for the Saguenay country. This part of Lower Canada never can be colonised, from the lands near the mouth of that river being treeless and shelterless, bare, barren, and repellant—showing one at the first sight their igneous origin—being composed of granite or gneiss—without any sign of vegetation whatever; neither animal nor vegetable life is seen in this dreary and desolate region, except the mournful croak of the raven or carrion crow, the solitary notes of the jay, and the musical or measured noise made by the puffing porpoise disporting himself in the broad river opposite.

The waters of the Saguenay are fed by

* The amount of money expended on the work is about £18,000.

Lake St. John about 250 miles north, in the Hudson's Bay Company's territory, where, although six degrees north of us, the lands are said to be rich and "blossoming like the rose;" the waters of this mighty tributary to the glorious St. Lawrence hurry through the confined channel at its mouth so swift when the tide is ebbing that there is no small danger to the hardy boatman, particularly should he get under, or between Mont Tonnere, or Mont de Diable; where he is sure to be buffeted about by Eolus.

Mr. William Price, of Quebec, has what is termed "the timber limits" of this territory as far as the Esquimaux country, down towards Miramichi and Anticosti—there being no owner of the soil in this sterile region but her Majesty the Queen, and the fast-decaying descendant of "Chingagouk."

After having visited Tadousac, Mr. Price's timber depot, and inspected his gigantic saw mills, rivalling those of Mr. Egan, of Ottawa, we passed a day or two exploring the country round about Tadousac. In getting on the summit of the highest hill in this neighbourhood we discovered no object worth noticing but pine and hemlock trees north and west of us; looking south, the prospect was not more inviting—nothing but the desolate dreariness of Anticosti and the Gulph of the St. Lawrence, with the distant hills of the State of Maine and the mountains of Gaspé enclosing the panorama.

We set sail for the ancient capital the morning of the 14th day, intending to visit the villages and other places on the north shore of the river, between the Saguenay and Quebec, about 250 miles. The first place we touched at was Les Basques, a little fishing colony lying in a sheltered cove on the north shore of the river. Whether these primitive people were descended from the noble race whom I, but a short time since, was sojourning amongst in Spain, I'll leave Mr. Darwin or other philosophers to inquire. All I have to say is the Basques of Canada East eschew garlic! La belle Katherine, eldest daughter of the alcade of the little colony, struck our youngest *compagnon de voyage* Constantine, as a person with whom he might carry on a *liaison*. She was a comely young damsel not quite out of her teens, dressed in the simplest fashion of the habitant, simply a blue home-made bodice and skirt, with the eternal crinoline; no ornament whatever, save a *gaze d'amitie* on her disengaged finger. Katherine was tall and straight as the poplar, with a true cast of beauty unlike that of a Freuchwoman—

"Her hairs' long auburn tresses down to her heel
Flowed like an Alpine torrent, which the sun
Dyes with his morning light, and would conceal
Her person, if allowed at large to run."

She made her betrothment to our young hero before we could escape from this colony, and on my leaving Canada shortly afterwards I could not learn whether the espousals were consummated.

The river from here up as far as *Les prairies* is bounded on the north side with perpendicular walls of steep adamantine granite; on which might float safely the Warrior. We were borne along by a smart breeze and flowing tide till we got to *Les prairies*, and went ashore and bivouacked for the night in a secluded little dell, where the melancholy cry of the "whip-poor-will" was the only music to be heard, except now and then the harsh croak of the bull frog—the Canadian nightingale!!

In my next paper I will have something to say touching on the present seat of government, Ottawa, New York, Philadelphia, and the coal district of Pennsylvania.

CATHOLIC UNIVERSITY HISTORICAL AND LITERARY SOCIETY.

ON Wednesday evening last, the inaugural address on the opening of the session of above society, was delivered in the Library of the University by the auditor, Mr. P. J. O'Connor. The chair was occupied by the Very Rev. Dr. Woodlock, Rector. The address was listened to with marked attention by a numerous assemblage, and as a resolution was passed after its reading that it should be printed at the expense of the members of the society, we lay before our readers its leading features only:—

The custom of inaugurating societies like ours with an address from one of the members, originates, I doubt not, in a principle which finds practical expression in other affairs of life. In nearly every pursuit, and especially in those having for their object the cultivation of the mind, there is a proximate danger that the end may be forgotten in the means, and hence it is necessary now and again to devote a little time to self-examination, with the purpose of ascertaining what may be the ultimate point of reading and reflection, and what particular function is performed by any instrument made use of in a system of general culture. With the starting point that the debating society is nothing more or less than a certain instrument of culture, and is intended to render as practical as possible such knowledge as is brought to it from other sources, it is not, perhaps, throwing away time to examine what is the object of culture itself, and with what aim and upon what principles knowledge should be acquired. Let it not be supposed that it is my intention, in setting up a high standard to which all should aspire, to have every one aim at being an Aristotle or a Shakespeare. It is quite possible to be educated to a very useful extent without possessing much knowledge, and even without an acquaintance with subjects usually considered indispensable in a finished education. A musician conversant with the principles which regulate the science of music would be in one sense educated; and so also might be a general, a politician, or a painter. Suppose culture to mean any kind of improvement whatsoever, it follows that there are many steps between its highest and lowest state, and since the limits of cultivation are indefinite it is clear that no perfect system can be devised. But if it is possible to specify the different grades by which the highest state is approached, it may be within our power to state generally what are the characteristics of an educated mind, and wherein consists the precise attribute which distinguishes a good from a bad system of cultivation. It was said before that a mere painter or musician might be considered in a certain sense educated, and it is likewise true that the art of painting or of music might, under some conditions, be an efficacious means of culture. It is clear, however, that not every painter or musician is really educated. To be so implies not to reach the power of reasoning well on any particular subject, as the capacity of reasoning in general, and upon any given subject where the materials exist for forming premises—the reasoning on particular subjects is, however, so closely connected with the general power of reasoning well, that, including prejudice, the capacity of any one is measured by his acuteness on special topics. It is easy, nevertheless, to conceive of a musician with an ear for Verdi, and no adequate appreciation of Mozart, just as by patient investigation a painter might be found an admirer of Frith or Macleise, with a very mediocre esteem of Raffael or Michael Angelo. But the one would not be an educated painter, neither would the other be a musician of a cultivated understanding. For supposing that either is capable of forming a judgment in what concerns his own art, he must do so either at random, or according to the laws which regulate in this especial case the connexion between the means used for producing an effect and the effect produced. But since these laws are uniform, whether applied to this or that painting, and are derived from the best models, it follows that, on the hypothesis that they are correctly derived, they must in all similar cases superinduce the same judgment of approval, or the contrary. And as precisely the same process takes place in every science, observations being first classified, and afterwards summarised in the form of principles, it follows that he who has reasoned scientifically upon the art of painting must be also capable of a sound opinion upon all subjects where his knowledge amounts to the conditions necessary before the formation of a judgment. The case supposed is, however, scarcely a possible one, for it is hard to conceive a person acquainted with one art or science, and altogether ignorant of whatever is not involved immediately in this particular matter. The boundaries which separate the different divisions of knowledge are so indistinct that it is scarcely possible but that the most self-denying student of one subject should now and again be found trespassing upon forbidden ground. Since,

therefore, it is hard to limit one's-self to one or a few subjects, it is important to ascertain upon what principle knowledge should be acquired, so as that each part of it may be of the greatest use in a system comprehending more than one subdivision. It is clear, in the first place, that an exhaustive acquaintance with two or more connected subjects is of more use than an acquaintance with many unconnected ones, it being better, for instance, to know chemistry and physiology together than chemistry and history, or chemistry and languages. The auditor then proceeded to a consideration of the value of history and the importance of keeping knowledge symmetrical by the association of ideas, and said that it is much easier to remember like and connected facts than such as were dissimilar. It was easier, for instance, to remember geometry and trigonometry together than geometry and Shakespeare's plays, so also it was easier to remember certain portions of English history in connection with Shakespeare than to remember the same portions together with astronomy or logic, for there being no common ground between the Wars of the Roses and the Solar system, no fact of the former suggested anything belonging to the latter, and both were kept in the mind by special efforts, and not, as in the case of cognate subjects, by natural affinity. The auditor then considered the advantages of studying special subjects as compared with an effort to obtain universal knowledge, and referred to the kind of knowledge which yielded the most return. He referred also to Greek and Sanscrit literature, and pointed out in what the literature differed from that of more modern times. After a lengthened review, the auditor said:—It would be well, perhaps, in an essay dealing with an entire course of literature, and trying to establish principles of agreement and uniformity between the sub-divisions which combine to form one universal literature, to treat of criticism at some length, and show that this is of itself not uniform, but varying according to the subject matter. But I think this is to some extent implied in what has been already said about the literature, of different ages, being not so many independent experiments in search of what is true regarding the beautiful; and, besides, I fear that your patience, so kindly extended to me up to this point, would cry out in a mild way against any further trial. I am conscious that the extent of the subject precludes the possibility of its being treated in anything like a complete way, and that many *lacunos* or gaps must have presented difficulties to the obtaining a clear understanding of the several points touched upon with the truths they were intended to demonstrate. But I think sufficient has been said to show the paramount advantage of systematic reading for a determinate purpose, and the capacity to reason and speculate freely within a certain range, however limited, over the desultory and unscientific pursuit of a variety of subjects.

ROYAL INSTITUTE OF THE ARCHITECTS OF IRELAND.

THE opening meeting of the session 1866-7 was held on Thursday evening, the 15th ult., in the rooms of the Institute, 212 Great Brunswick-street,

PARKE NEVILLE, Esq., C.E., V.P., in the chair.

Mr. J. H. Owen, M.A., honorary secretary, read the report of council for the past year, of which the following is an abstract:—

On the eve of surrendering into the hands of the members of the Royal Institute the trust confided to them, the council beg to submit a few observations on the events of the late session, and some memoranda of the progress of the Institute and the profession. The council held meetings on fifteen occasions during the session. The number of attendances of each member is submitted to the meeting to-night. At their meetings, in addition to other business, preliminary discussions took place with reference to the several matters which were subsequently brought before the institute at large. Among the most important of these was the projected establishment in the rooms of the Institute of a museum of architecture and building, towards which, however, little more than a commencement has yet been made. The council hope that the attention of the members of the Royal Institute being directed to it, they will, each and all, as opportunity arises, forward specimens and descriptions. The council are convinced that there are unheard-of treasures in many as yet unworked quarries in Ireland.

The subject of competitions was anxiously discussed at several meetings of the Institute, and a form of circular to be sent by the council to every committee advertising for plans was decided on. To combat the public liking for competitions with any measure of success will be only effected in time by the constant and repeated remonstrances of the profession as a body through its recognised representatives, by means of calm argument, free from suspi-

cion of bias through motives of personal interest. As cases constantly arise in which the legal aspect of technical facts is of importance to the profession at large and to the Royal Institute, the council recommended the desirability of the appointment of a standing counsel and solicitor, and that W. A. Exham, Esq., Q.C., and Messrs. Newtons and Armstrong should be selected to fill those offices respectively.

At the close of this session for the first time the Institute took as a body an excursion to one of those sites of antiquarian and architectural interest so common in Ireland, and, alas! so neglected—a condemnation which falls equally on the members of the Institute as on the general public. There are many other sites as interesting as Kilkenny within easy reach of the metropolis, to which an excursion, that would combine pleasure and profit could be arranged.

The council feel they would be wrong were they not to acknowledge the great debt of gratitude due to the Rev. Mr. Graves and Mr. Prim, who spent a laborious day in guiding the members to, and explaining to them the several objects of interest which the city contains.

The office of Vice-Patron of the Royal Institute, vacant by the retirement of the Earl of Kimberley, has been accepted by his Excellency the Marquis of Abercorn, in terms most gracious and flattering. The council cannot help feeling it a subject of congratulation that the high office of Lord Lieutenant of Ireland should be held by a nobleman who, although the descendant of royalty, has not looked on Ireland as only a source of income, but has by actual residence proved his active sympathy with and affection for this country.

The providing of papers to be read at the ensuing meetings is of such great importance both to the authors as encouraging industry, observation and the cultivation of style, and to the members at large as leading to consider, study and discuss topics which otherwise might receive but little attention from them, and to the Institute as rendering the meetings attractive, and thereby insuring a full attendance, that the council recommend, that at the commencement of each session a general ballot should take place of all the members of the Institute, that each member should be bound under the penalty of a fine to read a paper on the night designated by the order in which his name is drawn in the ballot. The council earnestly recommend the adoption of such a rule, and that it should be acted on as the ballot of names drawn on the first night of the session, now and in every subsequent session.

The council have to express their regret at the meetings of the association for architectural study having been so thinly attended. It would seem that the young men of to-day prefer their own choice, what the absence of means compelled their seniors viz.—to defer all possible study of their profession until they were driven to it by feeling the want of the results of study. They may find out when it is too late that it is ill sowing in harvest time. At the sketching meeting very little was produced, and that little largely contributed by fellows of the Institute, who attended in order to attract by example. To the same effect the council have to lament the very small number of competitors for the President's prize; although compelled by the great merit of one design to award the prize, the judges could not help feeling that the students, as a class, had not fairly carried out their part of the implied bargain.

The auditors have examined and certified the accounts, from which it will be perceived that it will be necessary to exercise the utmost economy in managing the affairs of the Institute, and to endeavour by every possible means to increase its income. The council beg to submit a list of council and officers of the Royal Institute for the following year. In preparing the list they have been guided partly by the comparative attendance during the past session, and partly by consideration of what is for the interest of the profession at large; and in conclusion earnestly call on the members of the Royal Institute to give it more of their time and more of their zeal. The respectability of the Royal Institute will be reflected back on its members, and principally on those to whose efforts it owes its position and status among kindred societies.

The following were elected council and officers for the ensuing year:—

Patroness—The Queen. Vice-Patron—His Excellency the Marquis of Abercorn, K.G. President—Charles Lanyon, R.H.A. Vice-Presidents—Sir Thomas Deane, P.R.H.A.; Parke Neville, M.R.I.A.; James H. Owen, M.A. Council—J. Rawson Carroll, F. V. Clarendon, A.B., Thomas Drew, Wm. Fogarty, John Lanyon, George Wilkinson, E. H. Carson, Charles Geoghegan, W. J. Welland, J. McCurdy. Hon. Sec.—James H. Owen, M.A. Assistant Sec.—Charles H. Brien. Treasurer—Sandham Symes. Auditors—Charles D. Astley and James E. Rogers. Counsel—W. A. Exham, Q. C. Solicitors—Messrs. Newtons and Armstrong.

Mr. Thomas Drew, Fellow, then described some drawings of St. Audoen's Church, High-street, for the restoration of which we understand a movement is on foot.

LOUGH ESKE CASTLE, CO. DONEGAL.

THIS castle (which is the subject of our illustration) recently erected by Thomas Brooke, Esq., is in the Elizabethan style. The east entrance front is 130 ft. in length. The principal entrance is by a handsome *porte cochère* projecting a distance of 30 ft. from the front of house, the spandrels and panelling over the entrance doors being sculptured with the "Brooke" arms. The steps to principal floor are contained within the porch. The roof of porch is formed with Gothic ribs and traceried spandrels; the spaces between rafters filled in with rough plate glass; the sides of porch have buttresses, also traceried windows and embrasures, and octagon towers on front. The principal floor contains drawing-room, 25 by 18 ft.; anteroom, 18 by 18 ft.; tower room *en suite* with drawing-room, 17 by 17 ft.; dining-room, 22 by 18 ft.; morning-room, 17 by 15 ft.; grand stairs, 24 by 13 ft.; inner hall, 20 by 13 ft.; back stairs, strong-room, water-closets, bath-room, butler's pantry, cloak-room and two bed-rooms. The windows to east front are five-light oriels, three storeys in height. Embattled parapets and gables are introduced. The octagon towers on kitchen wing to be used as ventilation shafts. The great tower overlooking the lough on north front is 22 ft. square and 80 ft. high. The walls of the first floor are built with a batter; circular bower windows project from principal floor to north front, and on bed-room floor to east front. The tower is machicolated, crenellated, and embattled, has square turrets on angles, and circular tower on fourth angle springing from corbeling, flagstaff, &c. The dressings throughout are of Mountcharles sandstone. The masonry is of finely punched millstone grit, of a superior quality, procured in the neighbourhood. The mansion stands on a picturesque site, and the tourist, after emerging from the wild and rugged scenery of the famous "Gap of Barnesmore," cannot fail to be struck with the beauty and grandeur of the landscape around Lough Eske Castle. The engraving represents the view facing the lough, with its islets and wooded banks, and the wild scenery of the mountains of Bluestack and Croghmageer rising out of it 2,100 feet. The architect is Mr. Fitzgibbon Louch, Londonderry.

THE ROYAL DUBLIN SOCIETY.

THE first evening scientific meeting of the 137th annual session of the society was held on the evening of the 19th ult., in the Society's House Kildare-street,

Sir RICHARD GRIFFITH, Bart., in the chair.

Mr. Robert H. Scott read his translation of a paper by Professor Oswald Heer, of Zurich, "On the Miocene Flora of Atane-kerdluk and North Greenland." The paper was interesting both from a botanical and geological point of view, and it went to prove, from fossil specimens of forest trees at Atane-kerdluk, in North Greenland, especially the *Sequoia Sempervirens* (redwood); that the climate of Greenland had formerly been 30 degrees higher than at present, the ordinary temperature of the locality being now 21 degrees, while the most northern latitude in which that plant now grows in Europe is about 53 degrees. The paper concluded by stating that it would be impossible, by any arrangement of the relative positions of land and water, to produce for the northern hemisphere a climate which would explain the phenomena in a satisfactory manner. It must only be admitted that we are face to face with a problem whose solution, in all probability, must be attempted, and, doubtless completed, by the astronomer.

Mr. Moore, curator of the Royal Dublin Society's Botanical Gardens at Glasnevin, then explained to the meeting the peculiarities of a large number of the plants treated of, by exhibiting their modern analogues.

A short discussion followed, after which the proceedings terminated.

ARCHITECTURAL SUPERINTENDENCE.

AMONGST the numerous vexed questions connected with architectural practice and hitherto treated in this journal, the above has hardly received a proper share of consideration, although forming a most important element in the connection between the client and the professional man employed to direct a building work. And why should it be so? Surely if the question of remuneration, viz., 2½ per cent. for designs, working drawings, and specification, and an additional 2½ per cent. for "superintendence," be conceded as just and reasonable, the architect should know in the latter regard what he has a right to give for his pay; and so has the client what he shall fairly expect of his (the architect's) personal time and attention in directing the work to completion.

But in how many instances do differences of opinion arise on this point; the architect perhaps meeting with some unreasonable, exacting, individual who never *would* be satisfied with *any* amount of pains bestowed in superintendence—confusing his legitimate duties of inspection with those of a clerk of works, or general foreman, who should be stationary on the spot;—or, on the other hand, the architect culpably neglecting his visits altogether, or making them extremely wide apart, depending, perhaps, on some tyro of a junior assistant, to "keep watch and ward" over the interests of his client, which he, as principal, undertook to protect in person. Between these two extremes, no doubt, there are mediums, when all goes smoothly—both parties being mutually satisfied;—but the reverse having frequently presented itself within our own individual experience, affording precedent for *this*, *that*, and *the other* knotty question in connection therewith being raised at any time, we can discuss the subject all the more confidently and practically.

While admittedly there must be considerable variation in the requirements for "superintendence" by an architect, according to the class of building over which he presides, and the difficulties of construction to be encountered in the several departments of the work; still, it is quite possible to form an approximate calculation, suitable to all ordinary cases, as to the proper measure of his duty, and which may be reduced to the following heads, viz.:

1st.—The periods of his visits.

2nd.—The time bestowed on each.

3rd.—The number of them from the commencement to the completion of the works.

With reference to point number one, a good deal must depend on the architect's own judgment, and on the circumstances in which he may be placed with his client, and the class of tradesmen engaged under him,—such "circumstances" demanding explanation as hereafter given. Now, as the foundations require the first visits of inspection, we hold, that for a building of ordinary magnitude the "periods" may be limited to the following stages; viz., examination of trenches; one during the construction of the footings, and one at completion—total (so far) 3.

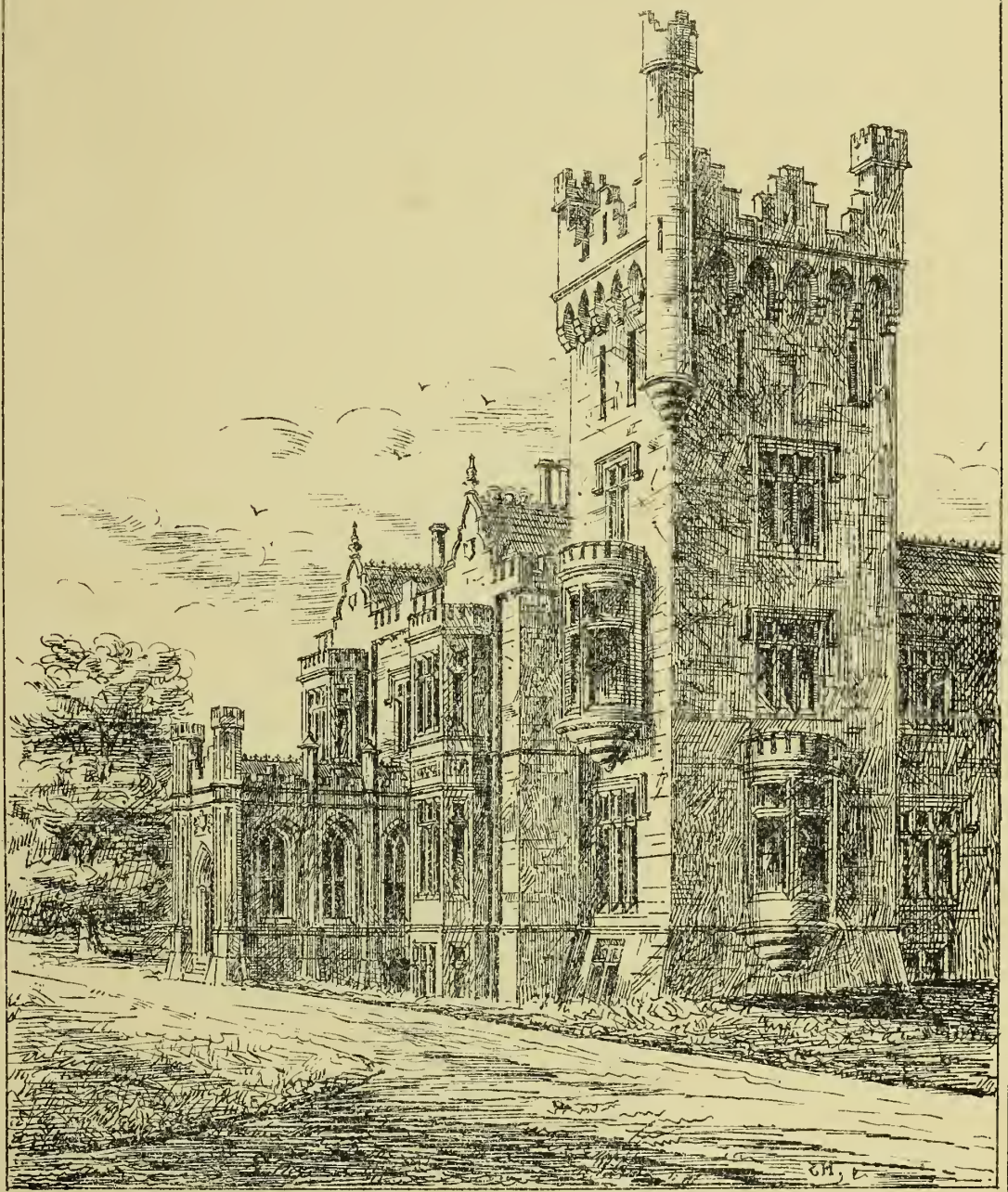
These we submit as ample, if there be a careful, competent contractor, or even if the building be proceeding on day's work under the supervision of a foreman assisted by good tradesmen; but if otherwise, and that the employée are deficient in intelligence, or capacity, the architect cannot be too vigilant—for his own credit sake, if for no other consideration—at *this* stage; as defective workmanship or insufficient precautions would be obviously attended with results more fatal to the stability of the work than hereafter.

Assuming that the superstructure (with or without basement) consists of masonry and brickwork only, another three visits of the architect would be quite sufficient for his satisfaction as to the general character and solidity of the work, the proper quantity of bond and bearing timbers, &c.; but if cut stone be introduced to any extent, this number ought at least be doubled, or perhaps trebled, according to the material he has to deal with.

For the constructive carpentry of his roof and the slating and plumbing thereof, the architect should inspect at least thrice.

The preparation of joiners' work, flooring boards and bridgings, stud partitions, staircases, &c., would demand three more visits; plastering one visit at least with *each* coat, viz., three altogether; and, to painting (which is easier rectified at any time than the other branches) we should allot two.

A general inspection then at the close of the work would fairly conclude the architect's duties of superintendence; but if through the requirements of an insatiable client, or the latter's formation of a blind contract with a panperised or a troublesome builder; or, again, his employment of incompetent tradesmen (to some of the so-called it is a perversion of the term to apply it at all), extra duties are imposed, we see no reason whatever why there should not be "extra" pay likewise. 'Tis well, therefore, for architects in entering upon an engagement, either to



MOYNE ESKE CASTLE & CO. DONEGAL.

*F. Louch Archt.
J. Derry.*

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name a limit for their visits of inspection for the 2½ per cent. on the outlay, or to undertake for such consideration only to *properly* superintend; thereby reserving the undoubted right to claim additional payment by way of increased percentage or otherwise for unforeseen loss of time.

Before we enter upon the consideration of our second point, as stated above, we may adduce a practical example of a client's unreasonableness; the worthy (?) in question deeming *sixteen* inspections, irrespective of several preliminary consultations, (of from one to three hours' duration) by the architect over *half* a range of ten suburban houses of commonplace construction and same plan nearly to each, insufficient; and visiting his displeasure, by employing another architect to succeed in the superintendence of the remaining *five*. And be it further noted that the same party, throughout the progress of the works, employed most objectionable material and workmanship, and did not in any manner sustain the protestations of his first architect against same.

"The time" to be expended on a visit, is a matter of no very difficult estimate under the ordinary circumstances of which we treat; for, as there is reason in other things, so ought there to be in this; and a client may most justly expect from his architect somewhat more of an inspection than a mere walk over the course, "as monarch of all he surveys," and a nodding acquiescence at all he sees,—and but questionably examines. Even a single cursory inspection is most damaging, inasmuch as, that if unprincipled parties be subjected to the supervision, the evils arising from their errors will be increased according to their speculations upon the oversightedness or the indifference of the architect; but if, on the other hand, searching and critical examinations be afforded each time habitually (let the periods even be somewhat less frequent than we have represented that they ought to be) an indirect guarantee, resulting from watchful precautions or fearfulness, is afforded to the proprietor in the absence of immediate supervision as well as in its presence. No building therefore, of moderate proportions and upon which efficient auxiliaries are engaged, ought to require the superintending architect to devote more of his time than a couple of hours at the very outside for each special inspection, and half that period or less to ordinary ones—unless in the case of very insignificant undertakings which would require much less; or very extensive works would require much more,—but to neither of which (steering, as we do centrally), do our remarks exclusively apply.

The number of visits (as per our third head) necessary for an architect to pay his work, may be summarized as follows, viz.:—

Foundations	3
Superstructure	3 to 6
For carpentry, slating, and plumbing	3
Joiners' work, &c., &c.	3
Plastering	3
Painting	2
General inspection previous to certifying accounts	1

In conclusion we submit, that amongst the recently well-digested rules of the Institute the foregoing suggestions ought to find a place too; for as yet no step has been taken by that body to define the duties of a superintending architect, although the subject of his remuneration has been fully discussed and arranged.

THE SEWERAGE OF ANCIENT JERUSALEM

ALTHOUGH the utilization of sewage and the draining of towns and cities upon a large scale are with us questions pertaining to modern times, they are by no means ideas of recent growth. True their development is due to the vast increase in our population, the expansion of old and the birth of new towns. Hence the importance the question of sewerage has assumed during the present generation. But it was even so with extinct nations and dispersed people, and the history of sewerage extends much farther back into antiquity than we are in the habit of imagining, or perhaps with our self-sufficient notions, of even allowing. Irrigation, in one form or other, has been, and still continues to be practised, in most parts of the world. Egypt, China, India, and other countries bear witness to its extensive adoption, and in Lombardy for at least eight hundred years it has been carried out on a large scale. It is also much practised in various parts of Italy, Belgium, and France. By common consent the credit of introducing irrigation into England is given to the Romans. Here its extensive adoption may be noticed in the counties of Wilts, Hants, Gloucester, Somerset, and Devon. The valley of the Wyley, from Salisbury to Warminster, presents, for a length of twenty-two miles, an almost unbroken series of irrigated meadows, their total area being about three thousand acres.

But the practice of irrigation is not exclusively confined to warm climates, as might at first be supposed. Scotland testifies to its success, whilst in the still colder climates of Sweden and Russia it is highly valued. It is by no means improbable, too, that the time is not far distant when Australia and Africa may be greatly enriched by a system of judicious irrigation. Unquestionably the founders of the ancient cities of the world exercised considerable care in order to insure their effectual and efficient drainage. They constructed capacious sewers for the purpose of carrying away the waste and refuse from within the walls of their cities, and probably with a view to their use in defensive warfare. Carthage and Alexandria had their sewers, and every city founded by the Romans bears evidence of having been carefully sewered and well supplied with water. There is, however, no distinct evidence that the sewage was utilised in any way, although it is scarcely probable that the Egyptians who practised irrigation before the dawn of history, should allow the waters from their cities to flow wastefully away. The Chinese, who have practised irrigation from remote periods, appear to have rigidly preserved the *fecal* matter of the people, and to have used it in connection with their system of irrigation. It does not however appear that they sewered their towns and applied their sewage directly to the land.

Our sanitary science is in a great measure based upon the Mosaic law, and it will therefore be interesting to examine into the sanitary measures adopted by the Jews, and to ascertain the methods employed by that nation for the disposal of *fecal* matter and sewage. There would be no difficulty in dealing with this question whilst the Jews pursued a nomadic life in their journeyings. Whilst they as a nation dwelt in tents, and moved from place to place, their *fecal* matter was deposited on the ground; deodorised in fact by the admixture with earth. But in the course of time the Jews became dwellers in cities, inhabiting houses, and introducing a new condition of things which offered no such facilities for disposing of their *fecal* matter as they had during their more primitive mode of life in the wilderness. To carry out their religious ordinances and obligations, however, it is evident that they must have adopted some method of disposing of the sewage of their towns which proved successful. Within the last few years much light has been thrown upon the ancient condition of Jerusalem. Modern research and discovery have brought to light three important facts with regard to that famous city:—It had an abundant supply of water—it was extensively furnished with capacious sewers—and, moreover, the sewage of the Holy City was utilised. In his excellent work on the water supply and sewerage of Jerusalem, Dr. Whitty states that Eusebius, who was a native of Palestine, and died there about the year 340, quotes Timocrates, the surveyor of Syria, to the effect that the whole of the city of Jerusalem flowed with water, so that even the gardens were irrigated by the overflowing waters out of the city. According to a paper by George Williams, B.D., upon the recent discoveries of Dr. Pierotti, the situation of the temple at Jerusalem appears to be fixed beyond all possibility of a doubt. This certainty has been established by the discovery of the complete water system connected with the Hebrew Temple, and which still exists as entire as when it was in daily use during the period of the Jewish commonwealth. Had this complicated system of aqueducts, drains, and reservoirs, been built up or constructed in any ordinary way, it is highly improbable that it would have long survived the superstructure of the Temple. But its perfect preservation is due to the fact that the water-courses are excavated in the solid rock, and thus they have not been affected by the demolition of the Temple, except that they are somewhat choked with the fragments of the ruined structure. If history had not informed us upon the subject, we must yet have inevitably concluded that some carefully-planned system of sewage must have existed in connection with the Temple. So, likewise, there certainly must have been a large supply of water to dilute the blood of the sacrifices, which otherwise would coagulate, to carry off both it and the offal from within the sacred precincts. But history plainly tells us that the supply of water was so arranged as to flush the whole court, and carry off the blood of the numerous sacrifices. The drain which led from the Temple discharged itself into a pit, which is now called the "Fountain of the Virgin." Into this pit also the drain of the city was probably discharged. This Fountain of the Virgin communicates, by means of a channel cut through the rock, with another pit to which tradition has assigned the name of the Pool of Siloam, but that this is an erroneous assumption there is little doubt, as there is ample evidence that this is not the true Pool of Siloam.

That the Fountain of the Virgin was originally a

cesspool there can be no doubt; indeed, it is a fact incapable of being controverted. The necessary consequence is that the so-called Pool of Siloam was likewise a cesspool formed for the purpose of receiving the liquid from the upper cesspool, in order that the manure in it might become sufficiently desiccated to be in a fit state for removal by the gardeners, who purchased it. The tunneled conduit was that through which the moisture was drained off into the lower cesspool or liquid manure tank. According to the Mishna, there was a certain cave beneath the altar whereby filth and uncleanness were carried down into the Valley of Kedron. The gardeners paid so much money as would purchase a trespass offering for the privilege of fertilising their gardens with the refuse or sewage. The liquid matter, after leaving the traditional Pool of Siloam, was used for the purpose of irrigating the King's garden, as it is in the present day. It will thus be seen from this description of the outfall works of the sewerage of Ancient Jerusalem that the sewage was collected in tanks, the solid matter removed from it and sold, the liquid being afterwards used for the purpose of irrigation. This plan is in effect identical with that in operation at the present time in Croydon and other places, where the town sewage is collected and afterwards turned across fields and meadows, enriching both the land and the owners thereof. — *English Mechanic*.

HOUSEHOLD ART.—BRASS AND BRONZE.

PUBLIC taste is often very perverse and inconsistent as to the choice and appliance of material and ornament. For instance, there has been a run upon bronze for drawing-room candlesticks, whereas brass is a far more brilliant material for the purpose, and is capable of being treated with greater richness of form and surface decoration. But on fire stoves and grates, where one would think lustre and delicacy out of place, the manufacturers continue to lavish gilding and polished steel to such an extent, that one is almost surprised at the housemaid's daring to light a fire upstairs at all. Of course, the fire-irons are made to match, and it is a positive fact that in most houses each drawing-room fireplace has two pokers—an humble one for actual use, and the other, of burnished steel, kept simply to look at. It is needless to say that while such absurd practices as these continue we can hardly hope for a healthy and vigorous development of what may be called household art. If fire-irons are made at all, they should be made of material which justifies their real purpose. The upper portions may be polished steel, though even this seems a needless effeminacy; but the rest should be of iron, and as simple as possible in design. With regard to ornament it should be borne in mind that incised patterns, however rudely executed, are much more effective than raised mouldings. The last we feel almost instinctively out of place in solid metal work. Light falls on polished steel, for example, too sharply and strongly to let it need the character and treatment of a wooden architrave. Of course, in the design of small objects executed in brass and the more precious metals the case is different, for they are seen nearer the eye, and are for the most part made by hand from thin plates of the material used.—*The Queen*.

ENIGMA.

(Written for the DUBLIN BUILDER.)

I am a pny little wight,
At fancy's will I'm great or small,
Here no bigger than a mite,
Come, guess me once for all.
At times I'm formed of giant size,
At distance to be seen,
Yet don't go farther than your eyes—
You'll find my name I ween.
'Twas twice pronounced in Eden
By Eve in accents fair,
'Tis always breathed in heaven,
In earth 'tis ever there.
Go search the world, 'tis hard to find me,
Although I am in every clime;
If you could look into eternity
You'll see I am the end of time.
Yet search a church, the corner of an aisle,
Or nave, perchance I'm there.
Hush! 'tis me; ah! list awhile,
For I'm absorbed in prayer.
Mortal I am not of, nor of man,
But in death you'll always find me,
My name how surely you can scan
When I leave thee behind me.
Ever in merriest company,
Tho' waisail's not my sin,
In debt and danger you'll see me,
While a prison I ne'er entered in.
Yet in fetters am I, tho' with the free,
Neither sorrow nor joy do I know:
Always in revel and revelrie,
Still plunged I'm for ever in woe.
In health and in wealth and happiness too
I'm heard of in life tho' found in the grave,
In my bequests you'll find me, and bequeathing to
And think mine was the end of a knave. [You,

THE CENTRAL PACIFIC RAILROAD.

(Continued from page 272.)

ACCOUNT OF THE TUNNELS.

On the line between Alta and Cisco there are two tunnels completed. One is about 600 ft. long through cement, and the other about 300 feet long through drift. Their depth below the surface of the points pierced is from 50 to 70 feet. The cost of cutting them was light. The longer tunnel is timbered for 30 feet, the shorter one is timbered nearly its whole length. In the first tunnel, at Grizzly Flat, 6 or 8 miles above Alta, a water-worn stick of cedar, several feet long and 6 inches thick, perfectly preserved, was discovered, and is now in the company's office. Although thousands of years have elapsed since it was tossed about in the water before being buried by some rude convulsion of nature, it is so well kept that it can be whittled with a sharp knife.

From Cisco to the Summit two other short tunnels are being cut through hard rock; neither is more than 300 feet long. The great work of this kind is the Summit Tunnel. This begins about 13 miles beyond Cisco, at the precise point where the greatest elevation on the entire road is reached. This point is distant from Sacramento 105½ miles, and 7,042 ft. above sea level. The tunnel is meant to pierce a peak on the north side of the Pass, and will not be more than 120 feet below its surface. This peak might have been flanked by a curved track, but so good a line of grade on the eastern slope could not have been obtained. The tunnel not only secures this better line at its eastern end, but avoids the locality of some fatal avalanches of snow. It will be about 1,636 ft. long, 16 feet wide in the clear, about 18 feet high, with an arch of 8 feet, and must be cut all the way through hard granite. It is approached at either end by open cuts through softer rock, so as to begin with a solid front. Gangs of men are working at both ends towards the centre, and another gang is sinking a shaft on the centre. When this shaft reaches the line of the tunnel, cutting will proceed either way towards the gangs working from the openings. All the work is done by drilling and blasting. In view of such labours as this, in connection with all the rock cutting from the foothills up, one can readily believe the statement that the company have used for drills in cutting their stony road bed over 100 tons of cast-steel, that they will use 150 tons more, and that they use from 250 to 300 kegs of powder per day in blasting. The grade of the Summit tunnel is downward from the western to the eastern end. As we have said, this end of it is the highest point of the road. The profile of the road shows a straight ascent to this point, and as straight a descent east of it—making a sharp peak or angle. The tunnel will be completed in about one year from this time. As the road will be in running order across the summit before its completion, a temporary track will be laid on a grade around the peak, so that there will be no delay in making a practical connection for business. There may possibly be one or two very short tunnels through points on the eastern slope, which perhaps can be cheaper and quicker passed through in that way than by open cuts. Operations in the tunnels beyond Cisco are continued night and day, and will be prosecuted all winter.

SCENERY UP TO THE SUMMIT.

The scenery along the grade beyond Alta, as we have already stated, is remarkably fine. The cuts and fills, and lofty curved trestles, afford vistas of yawning chasms and towering peaks, of frightful precipices, minster-like crags, and columned avenues of forest. Here a lofty mountain walls the hazy distance of a vast amphitheatre, and there the divided ridges reveal a perspective which seems to melt in the sky. There are canon depths measured by thousands of feet in a direct line, while the highest peaks close about the grade at the summit must be 2,000 feet above the road. The grade passes right under the face of Donner Peak, and on emerging from the Summit Tunnel passengers will see Donner Lake 1,000 or 1,200 feet below, with its grand framework of snow-covered peaks. Two miles this side of Cisco is Crystal Lake, about one-fourth of a mile from the road, and 25 or 30 feet above it. These lakes are very clear, and hold in their still breasts twin pictures of the glistening or cragged peaks that rise beyond their great margins. Milder beauties of scenery are observed in the dashing cascades, alternating with lazy curves and quiet pools, of the sources of the Yuba, and in the narrow strips of valley, where the tuft grass, the willow, and the buckelberry flourish.

THE WORK BEYOND THE SUMMIT.

The line of the Pacific Railroad is located east of the Summit as far as the Big Bend of the Truckee river, in the State of Nevada, 187 miles from Sacramento. Preliminary surveys have been made beyond this point again to Salt Lake, and three parties are now in the field seeking the most feasible route to that city. When this is ascertained, the working line to Salt Lake will be located. The company declare that

they intend to build their road to that destination before the Eastern Company can reach or pass it. The work on the Eastern Slope and across the Utah Basin will be much easier and cheaper than on this side of the Summit. The grade on the Eastern Slope is generally light, the maximum being only 90 feet—while much of the grade beyond the eastern base of the Sierra Nevada is quite level. It should be remembered that the country in Nevada and Utah, known commonly as "the basin," is an elevated plateau. The difference in elevation between the highest point on the railroad at the Summit—say 7,042 ft.—and the Great Bend of the Truckee is only 3,000 ft.; showing an elevation for the plateau of 4,042 feet. The sum of the difference noted also represents all the elevation to be overcome in ascending the Eastern Slope, which is less than half that to be overcome in ascending the Western Slope. For these reasons the work east of the Summit can be pushed much more rapidly than was possible on this side, and the government subsidies will be more valuable. The 32,000 dollars per mile across the basin will be more profitable in proportion to the cost of the work than the 48,000 dollars per mile for the mountain work. The difference in expense between the two divisions is so great that the company once expressed their confident belief that the cost of grading the first 50 miles of the California road equalled the cost of grading 300 miles of the line between the Missouri River and the Rocky Mountains.

WINTER WORK AND SNOWS.

The winter snows will prevent the completion of the grade from Cisco to the Summit before next spring; but the season will be improved by shifting the labouring force, without any reduction, to the Eastern Slope, below the snow line, where the grade will be pushed energetically, and where camps and depots of supplies are now being established. In this connection it may be said that the company profess to entertain no apprehension of serious difficulty from snow. The location of the road on the sides of the ridges is favorable to the use of snow-plows for clearing the track during and after storms; and the grade is kept so near the upper line of the ridges that there is not much exposure to slides. The engines used are of great power necessarily, and are therefore better fitted for the work of clearing the track.

STATIONS, DISTANCES, AND ELEVATIONS.

For convenient reference, and to illustrate at a glance the up-hill character of the work on the Western Slope of the Sierra Nevada, we give the following table, never before published, of the distances between the stations on the Central Pacific Railroad, and their elevations above the sea:—

	Distance (Miles).	Elevation (Feet).
Sacramento	54
Arcade	7½	76
Antelope	15	180
Junction	18	189
Rocklin	22	269
Pino	25	420
Newcastle	31	980
Auburn	36	1,385
Clipper Gap	42	1,785
Colfax	62	2,448
Gold Run	64½	3,245
Dutch Flat	67	3,425
Alta	69	3,625
Cisco	93	5,911
Summit	105½	7,042

This table strikingly illustrates the magnitude of the work necessary to carry a railroad across the Sierra Nevada, and the reader will readily believe that the road is entitled to be ranged among the most remarkable achievements of science and labour combined. The elevation which it surmounts exceeds that of all but one of the passes of the Alps, and is the greatest yet reached by any railroad in the world.

THE TOWNS ON THE ROUTE.

Several of the places in the above table—besides Sacramento, the State Capital—are towns of considerable consequence.

Junction is a thriving village in the foothills, created by the business of transferring passengers and freight to and from the cars for Marysville and the region of the upper Sacramento Valley.

Rocklin is the locality of the granite quarry from which is procured the granite for the State Capitol. The State owns half a mile square at this point, including the quarry, which was deeded to it by the railroad company as one of the conditions of the State's payment of interest on its bonds. The company also transport the granite free of charge. Another quarry at Rocklin is worked on a lease from the company. The granite obtained here is fine-grained, light-coloured, and very hard. A side track is laid to the State quarry. The granite freight from Rocklin to Sacramento averages about 700 tons a month. It is largely used on the government works at San Francisco. It is delivered on board schooners at Sacramento for 1 dollar 80 cents per ton—a great reduction over the old rates of transportation from Folsom. Rocklin will be something of a town hereafter. The company is building here a granite Round House

which is to contain 10 engines, with an ultimate capacity for 25.

Pino is a lumbering point, as its name implies, where a busy saw-mill sends out a grateful fragrance from fresh cut planks, piles of which await transportation.

About three miles beyond Pino is Penryn, so-called by a sensible Welshman, who leases another granite quarry from the company. Penryn ships about 100 tons of granite per month.

Newcastle was a mining camp some years ago. It grew to be a pretentious village as the headquarters of railroad operations, and promises to live as such. It contains 25 or 30 houses, several stores, an hotel, saloon, &c.

Auburn is well known as one of the principal mining towns, and as the capital of Placer county. It boasts of two brick churches and two weekly newspapers, of several productive vineyards and orchards, of partly exhausted placer diggings, of a considerable Chinese element in its population, and of a new-born zeal and reputed success in gold-quartz hunting.

Clipper Gap is a railroad camp, and is decaying as the road goes ahead.

Colfax was named from Schuyler Colfax, who visited that point when it was the terminus of the railroad track. It is a thriving and busy little town, where passengers and freight for Grass Valley, Nevada and other places in Nevada county, take to stages and teams. It is only fifteen miles from Grass Valley. It was built entirely by the railroad business, and may have a population of nearly 500, including the usual "smart sprinkling" of gamblers and Chinese.

Gold Run is another considerable mining town, where are deep hydraulic diggings. Its population was formerly supplied by pack trains, and would have laughed at the idea of a railroad ever climbing by their dizzy mule paths.

Dutch Flat is another and larger mining town, where a newspaper is published and some efforts at horticulture and farming are made. It is famous as the objective point of all the ridicule and scepticism formerly heaped upon the builders of the Central Pacific Railroad.

Alta is another creation of the railroad, and was possibly named in grateful memory of the friendly zeal of the principal morning newspaper at San Francisco. It is the point where from 30 to 40 teams a day load with goods for the towns in the State of Nevada, and where passengers take coaches for the same destinations. It is built of new pine-planks that still emit a resinous odour, has a population of several hundred, and is a point where foolish laborers gamble off their wages.

There are several other towns adjoining the line of the railroad, lying both in Placer and Nevada counties, and others which can be seen at a distance, clinging like swallow's nests to the eaves of the hills. These are all mining towns, and are surrounded by deep excavations made by hydraulic washings, that glare red desolation through the green woods or blue space. The mountain towns named lie in Placer. After leaving Alta, the railroad crosses the boundary between Placer and Nevada several times. Cisco, a flourishing young trading and mining centre, is in Nevada. It derives consequence from being the depot of supplies and freight for the Meadow Lake district and Summit City. It has a nearly level site on the banks of the Yuba, and possesses a bracing climate, which is much praised. At Crystal Lake, two miles this side of Cisco, a village for the accommodation of tourists is growing up amid very picturesque surroundings. Many visitors have repaired thither the present season, and hereafter it may be one of the popular mountain resorts. One or two other settlements must grow up along the road down the Eastern slope, and a watering place and depot must arise at Donner Lake.

INDUSTRIAL EFFECTS OF THE ROAD.

The effect of the railroad in building up towns and developing local resources is partly seen in the above notices of the towns along the route. In addition, we have space only to say in general terms that it has led to the erection of numerous saw mills, to the opening of granite, slate and limestone quarries, and to the occupation and improvement of considerable land. Large quantities of lumber and firewood are brought to a market. Of lime, 200 tons a month is brought down from Newcastle alone. The company consumes a large amount of lumber itself, all its ties and superstructures being sawed out along the road, from sugar pine. Before the road entered the pine region its ties were brought from the Mendocino red-woods. The agricultural products along the road do not yet form a large item in way of freights, being mostly consumed where raised; but there will ultimately be considerable mountain produce, especially fruit, wine and vegetables, transported to Nevada. All the mountain valleys and other mountain lands along the road adapted to cultivation are being taken up, fenced and prepared for future use. A wild hay

is gathered in large quantities in the summit valleys, and will form an item of freight hereafter.

THE LAND BUSINESS OF THE COMPANY.

There has been listed over and patented to the company, thus far, along the line of the road to Alta, about 100,000 acres of land. This lies mostly in the valley, and 13,500 acres have been sold, occupied, and improved. The price is 2 dollars 50 cents per acre—"first come first served." The company refuse to sell any land that has not been listed or patented. Buyers, at their option, may pay all immediately, or 20 per cent. down and the remainder in five years at 10 per cent. This liberal provision, and the fact that they can get title from the company immediately, induces settlers to prefer buying of the railroad to preëempting under or buying from the government. Sales at the present time are quite brisk, and the land business of the company has to be transacted in a separate department. As the farmers dispose of their crops, they come forward as purchasers. The company follows the same rule in disposing of lands to which there is more than one claimant, that is adopted by the Government Land Office, which is found to afford the amplest security for the rights of actual settlers, prior possessors, and those who have made improvements. Lands in the foothills and mountains will not be listed and patented until surveyed by government, and the agricultural segregated from the mineral lands. The reader will remember that mineral lands are exempted from the terms of the grant to the company. The Department at Washington has established the rule that all lands worth more for any other purpose than mining are not mineral. The United States Surveyor-General, under the provisions of the Mineral Land Bill and special instructions from the Department at Washington, can proceed to survey any township or section in the mineral regions, making it conform to the lines of the general survey. Hence the way is open at once for acquiring titles in the mining region. The government surveys are extending on each side of the Central Pacific Railroad, and the township that will embrace the summit grade is being surveyed now. This work is being done by the Surveyor-General, under instructions from the Land Department, for the purpose of connecting the line of the road with the public surveys, and thus facilitating the ultimate listing of the granted sections. The company itself is making no surveys, nor is it anticipating them in bargains to sell. By this means it avoids making disputes and trouble. It is ready to sell to the first applicant so soon as it obtains title, and at the one price named. It has been the means of adjusting disputes between settlers in the valley, who preferred to buy from it, and by thus quieting titles has stimulated improvement. No land has been reserved from sale. The company expects to gain more by the increase of business from settlement and improvement of lands, than could be realized by waiting for appreciation of real estate values.

MISCELLANEOUS ITEMS.

There are now on the Central Pacific Railroad 14 first-class engines, and over 200 freight cars. Two more engines of extra power and 100 freight cars are on the way. Truck cars are made at the company's shops, and it is probable that they will ultimately manufacture most of their cars.

The road was estimated to cost from the initial point, Sacramento, to the State line, near the summit, about 9,393,780 dollars; and from the State line to the Big Bend of the Truckee, 2,500,000 dollars more. The estimates have thus far not been exceeded, but on this point we have no precise information. The magnitude of the high mountain work is manifest from the fact that the estimated cost for the 35 miles from Dutch Flat to the Summit was about half the total estimate for the whole line from Sacramento to the Big Bend of the Truckee, a distance of 187 miles.

Excavations along the road have developed veins or deposits, more or less valuable, of auriferous quartz, sulphurets of silver, iron and cobalt, nickel, copper, alum, clay, chalk, plumbago, asbestos, soapstone, limestone, slate, marble, and a little coarse sandstone. The marble found is in narrow veins, and dark grey in colour. Granite is found in immense quantities. Cobble stones, of course, everywhere abound. Some of the quartz veins found have been located by persons living in the vicinity; the company does not turn aside for such things. Fossil woods, mostly siliceous, are common in the diluvium along the route, together with impressions of leaves, &c., &c.

THE STATISTICAL SOCIETY.

The opening meeting of the above Society took place on Tuesday evening, in the Lecture Hall of the Museum of Irish Industry, St. Stephen's-green, under the presidency of Sir Robert Kane.

The hon. sec. read the annual report, from which it appeared that the number of members, and the amount of the society's finances, were annually steadily increasing. The report concluded with the

following paragraph:—"We notice with satisfaction that the National Association for the Promotion of Social Science have acceded to the invitation of the Town Council of Belfast to hold their next congress in Belfast. The meeting has been fixed to take place in September, 1867, and we feel confident that the members of this society will avail themselves of the opportunity to again manifest their interest in the Association for the Promotion of Social Science, which they evinced in so marked a manner on the occasion of the association's former visit to Dublin in 1861."

Sir Robert Kane then delivered the inaugural address, of which we give the more important and interesting portions:—

"Within the last few years the necessity for a proper knowledge of sanitary laws, and the observance of sanitary conditions in the life of the people, has been recognised by the governing classes; and it is now generally understood that violent epidemics, such as that from which we are not as yet quite free, although creating great alarm and attracting universal attention by their rapidly destructive effects, yet, like the transitory though violent disturbances of our atmosphere, exercise but a subordinate influence on the real value of human life or the true conditions of human happiness, as compared with the silent but continuous action of those preventable sources of disease which are everywhere and at all times in operation, and by which a much larger number of lives, that might have been saved to their families and to the State, are lost by ignorance and inertness. Under this stimulus, however, considerable progress has of late years been made in every department of sanitary science, and various legislative provisions have been devised to meet the more positive and prominent necessities of society. This increased attention to the subject has mainly sprung from those epidemics, affecting both man and the lower animals, which have within the last few years assumed such national importance. This cause will, as I hope, prove temporary; the good effect shall, as we may trust, be permanent, and will be the origin of improved social arrangements better calculated to maintain the true conditions of health among the people. The basis of all questions concerning the public health must be the rate of progress of the population, its increase in number, and the average value or duration of life. In regard to our population there is no doubt that it continues to show a decided diminution, as the tide of emigration which still pours from our shores more than counterbalances the natural rate of increase, from the excess of births over deaths belonging to a normal state of population. Our system of registration of births, deaths, and marriages is still of such recent introduction and is still so imperfectly observed in many districts. A considerable diminution in the rate of loss (by emigration) is shown by the returns of the last quarter of this year, and the hope may be suggested that its greatest intensity has passed away. In Dublin, owing, unfortunately, to the decay of a large portion of the city, by which mansions, once the residences of the rich and great, have become the tenements of the miserably poor, the evils of overcrowding do not take precisely the same form as in the manufacturing towns of Great Britain, where the constantly growing numbers of workmen accumulating within the same space has produced such bad results. Even in Dublin, however, and even in our provincial towns, Dr. Mapother has shown that tenements occupied by our working classes present some of the very worst features as to disease and filth that should occur, and it is fortunate that the lately increased power which the Legislature has conferred upon the civic authorities will lead to the establishments of a standard of minimum accommodation, which must be provided in all tenement lodgings, under a direct and unavoidable penalty. By such means a great deal of this evil may be abated. In the prevention of disease, therefore, so far as hygienic measures are concerned, you will observe that I place foremost those means which have for their object to elevate the standard of living, and to increase the vital force; to raise the life-energy of the people; 1st, to enable, by cleanliness, the skin to perform those functions by which a proper equilibrium of the solid and liquid constituents of our system and the healthy constitution of our tissues is preserved; 2nd, by a proper supply of air to afford to the lungs the requisite means for aerating the blood, and supporting that combustion of the carbonaceous elements of the food by which the temperature necessary for the existence of animal life is maintained; and 3rd, to obtain full access of light, the true vivifier, the great source of energy in nature, without which neither chemical nor physiological action can be duly carried on. If those beneficial agencies are present, the influence of contagious miasma may be comparatively little dreaded. You are all aware of the great scale on which the proposed new water supply of Dublin is now being organized; the Cyclopean reservoirs, the gigantic pipes, the successive stages of whose slow

construction have been festively celebrated. Let us hope that before very long the expected water supply shall be actually placed at the disposal of the citizens, and that the promised advantages to the security of life and property against fire, to the health, the cleanliness, and the safety of the people, may be realised. We may recognise among the maladies which are known as infectious or contagious the two groups of fermentative and of parasitic diseases; of the former we may regard small-pox as the characteristic type, with probably oriental plague and the cattle disease, from whose ravages this country has so far fortunately escaped. In those the virus may be transferred by inoculation, and, acting on materials naturally existing in the blood, generates by a fermentative action matter of the same kind, which often tends to eliminate itself from the system under various external forms. Not so easily explained as results of fermentative action are the phenomena presented by the spread of the contagion of Asiatic cholera and typhus fever. Those terrible pestilences appear to inflict their ravages by further means; and many phenomena appear to lead to the belief that those and some similar forms of disease are generated by means of minute beings, which, being diffused through the atmosphere, settle down on certain places or on certain individuals in a most irregular and anomalous way, although in all cases favoured by want of cleanliness, drainage, and ventilation, and often directly supplied through water and through communication with diseased persons or places. Such diseases do not admit of being directly reproduced by inoculation, nor can in most cases any distinct virus be exhibited; but this is probably due to the imperfection of our means of investigation, and not to any real distinction in the two classes of disease. The transference of such organic germs is illustrated by the curious form of fever which has been epidemic for the last few years in Central Germany, and which has been traced to the development in the muscular tissue of the human body of a microscopic worm, the *trichina spiralis*, which obtains entrance from diseased meat, especially pork, having been used as food. In this extraordinary disease every part of the muscular tissue becomes infested with this minute animal, and a small bit of diseased muscle, if inserted in the muscle of a healthy animal, transplants the parasite, which then lives and multiplies in its new position, to the imminent risk of the individual who has afforded it a home. It may interest some of my friends here to know that this little worm, although showing utter indifference to every kind of drugs, has an intense dislike to alcohol, and the only individuals in Central Germany who have been lately able to eat diseased meat with impunity have been those reckless individuals who washed down their roast pork and sausages with copious libations of corn brandy. The disinfecting agents, chlorine especially, have the property of destroying foul smells by the process of changing the nature of the fetid material, and generating other bodies which are free from practical inconvenience. They are, therefore, very usefully employed for the purpose of deodorizing or disinfecting, those words being popularly considered synonymous, the sewage and other similar materials which should otherwise become offensive nuisances. It is, however, very necessary to distinguish between these two actions: an atmosphere apparently pure and bright may be loaded with typhoid emanations; a water clear, fresh-tasting, and sparkling may be infected with the cholera poison derived from drainage through the soil of the neglected sewage of neighbouring infected places. On the other hand, the air of a chemical laboratory, or of a manufactory, may be offensive from the escape of ill-smelling gases or vapours, and yet be totally incapable of producing contagious disease. An atmosphere may, however, be injurious to life from the presence of directly poisonous gases independently of any power of producing contagious disease, and may thus be vitiated by overcrowding, by exhalations from cellars and pits; by the proximity of lime or cement kilns, which diffuse the poisonous gases, carbonic acid and carbonic oxide. Such air may be rapidly fatal if respired, and yet present no sensible indication of the danger. On the other hand, although sulphide of hydrogen is extremely poisonous when respired, such is the disgusting smell and taste of air containing even one ten-thousandth part of its volume of that gas, that attention is at once called to its presence, and the danger may be avoided. By means of chlorine this poisonous gas is at once destroyed, other compounds being formed which are free from any injurious properties. The influence of a large city like Dublin is necessarily to impoverish the soil of the surrounding districts, unless means be taken to restore to the soil the residual materials of the food which has served for the support of the inhabitants. The question of sewage, to which I have already referred in connexion with the means of health and cleanliness, assumes, thus, additional importance, when considered in relation to restoring the productive powers of the soil. The utilization of town sewage, however, must de-

pend for its practicability on many complex conditions, as to form and locality,—upon considerations not merely of chemical and engineering skill, but also of financial prudence. Into those matters it would be impossible for me to enter; as regards this city, the subject is in the hands of the municipal authorities, assisted by eminent professional opinions, and from what I have seen of the plans recently under consideration, I have no doubt that before very long we shall see our river and its quays restored to their primitive salubrity, whilst what is now a source of defilement and disease will afford the means of reclaiming new lands to profitable cultivation, and afford new sources for the supply of food."

L A W.

COURT OF COMMON PLEAS.

Burdin v. the River Fergus Navigation Company.—Plaintiff, a civil engineer, brought an action for work and labour done by him, and money laid out in expenses in connection with the preparation of an act for the reclamation of slob land adjoining the River Fergus. The action was tried before Chief Justice Monahan, and a verdict directed for the plaintiff for £750—that amount being made up of two sums, of £400 for work done by plaintiff previous to October, 1859, and £350 for work done by him for the company subsequent to that date. Liberty was reserved to defendants to apply to have the verdict turned into a verdict for them. Council for defendants admitted that there was work done by plaintiff to the extent of £750, but they contended that it was to the promoters of the company, with whom plaintiff had an agreement, that he should look for the payment of this sum. Defendants purchased the property of the company on the understanding that it was freed from all liabilities of the kind. On part of plaintiff counsel stated that, after executing the large quantity of work which was done preliminary to obtaining the bill for the establishment of this company, he went to South America, and was employed in making railways until he became seized with fever and was obliged to return to this country. He then brought his action for payment of work done by him on behalf of the company. In pursuance of the leave reserved, the court granted a conditional order to have the verdict turned into one for the defendants, and the case now came on for judgment. Chief Justice Monahan delivered judgment, disallowing the cause shown against making absolute the conditional order.

Bateman v. the Newry and Armagh Railway Company.—Action to recover the sum of £34,000, being the amount of fifteen bills of exchange, drawn by Messrs. Watson, Overend, and Co., of London, railway contractors, for work done by them in constructing the defendants' line, and accepted by the defendants, and endorsed to the plaintiff by the drawers. The defendants pleaded, and also demurred. The demurrer averred that the company was incorporated by Act of Parliament for the purposes stated in that Act only—that the bills now sued on were accepted by the directors of the company, affixing thereto the seal of the company without any order of a general meeting, or the assent of the shareholders for the purpose of raising money, and that such bills were invalid. The plaintiff replied and demurred, alleging that the bills had been accepted for work done by Watson, Overend, and Co., and the defendants demurred to this replication. The principal questions involved were whether railway companies, without express authority given by their Act of Parliament, can deal in negotiable instruments, and whether such companies can be regarded as trading companies, so as to entitle them to pass bills of exchange. There was also the further question, as to whether the bills did not cease to be bills of exchange and become instruments in the nature of bonds, by having the seal of the company affixed to them. The case was argued by Messrs. Dowse, Q.C., and Robert Anderson for the plaintiff; and Messrs. Harrison, Q.C., and M'Blain, LL.D., for the defendants. It now came on for judgment. Chief Justice Monahan delivered judgment, holding that the railway company had no authority to deal in bills of exchange, there being no express power given to them for that purpose by their Act of Parliament, and, therefore, the action could not be sustained.

Tracy and another v. Bennett.—This was an action brought by Messrs. Maurice and Patrick Joseph Tracy, of Morehampton-road, Donnybrook, builders, against Mr. Charles Bennett, auctioneer, carrying on business at Upper Ormond-quay, to recover a sum of £57 14s., the alleged value of certain extra work done in and about the erection of a dwelling-house and offices for the defendant at Shankhill, Co. Dublin. The defence substantially was that plaintiffs contracted to erect the dwelling-house and offices for a specified sum, pursuant to the plans furnished by Mr. Carson, architect, and, by the terms of the contract,

if any extra work were required to be done, or any deviations or alterations made, the value thereof was to be ascertained by Mr. Carson, and his decision was to be final; that Mr. Carson valued the extra work done by plaintiffs in this case at £25 19s. 6d., in addition to the amount to be paid under the contract, and defendant brought the £25 19s. 6d. into court as sufficient to answer plaintiff's claims. The jury disagreed.

CHANCERY.

Canning v. Savage.—In this case a petition was presented for an injunction to restrain respondent from working a certain quarry in the neighbourhood of Rostrevor, in the County of Down. Petitioner was the owner in fee of the lands upon which the quarry existed, and he had purchased the fee from a gentleman who had also purchased same from Colonel Roxburgh. Petitioner complained that respondent had worked the quarry and had removed thousands of tons of stones therefrom, without the authority of petitioner. Respondent, while he admitted that he had so quarried the stones, justified his doing so, because he alleged that not only was he authorised so to do under Colonel Roxburgh, but that he did so under an agreement entered into between him and the agent of petitioner, agreeing to let to him the said quarry at a rent of £150 a year. Petitioner denied that this agreement was binding, inasmuch as there was no note or memorandum thereof in writing, and that therefore, even admitting such agreement existed, same must be void, being within the statute of frauds. The Lord Chancellor pronounced judgment, dissolving the injunction, and dismissing the petition with costs.

Reid and another v. Thompson.—The petition in this case was filed on the 7th August last, by Messrs. Alexander Orr Reid and John Robb, who carry on the business of general drapers and silk mercers at 15, Castle-place, Belfast, to restrain respondent, who is the owner of the adjoining premises, from raising those premises so as to obstruct the light which petitioners were entitled to have through certain windows in a passage between petitioners' and respondent's premises, called Castle Chamber Passage. Petitioners alleged that the windows in question were ancient lights, and that the obstruction of them would seriously injure them in their trade. Respondent, who was about to raise his premises for the purpose of constructing a large restaurant, insisted that the injury that would be done was so insignificant that the Court of Chancery would not interfere to restrain him by injunction, but would leave petitioners to bring an action at law for damages, as also that the light in question has been already obstructed by the buildings of the Ulster Club. Judgment deferred.

IRISH BUILDING NEWS.

ESTABLISHED CHURCH.

The new parish church of St. Andrew was consecrated on yesterday (St. Andrew's day) by the Archbishop of Dublin, in presence of his Excellency the Lord Lieutenant and a numerous and highly respectable congregation. The admission was by tickets, which were limited to the number that could be conveniently accommodated in the building. In our leading article we give a full description of this beautiful edifice, so far as it is completed, from the designs of Messrs. Lanyon, Lynn, and Lanyon, of Belfast and Dublin.

St. Patrick's Church, Newry, which had been closed during extensive alterations, was re-opened on Sunday last. This ancient edifice, said to be the oldest Protestant church in Ireland, has been repaired and remodelled—indeed, almost rebuilt—by the present incumbent, the Rev. Francis King. During the late operations, a new vestry has been built; the church has been newly flagged; the old pews, inconvenient and beginning to decay, have been removed and replaced by open sittings. Nearly the entire expenses of these alterations and repairs were undertaken by the Ecclesiastical Commissioners, aided by the trustees of the Earl of Kilmorey.

The parish church, Newtownards, has been re-opened after enlargement and general repair. By the addition of a north aisle, sittings have been provided for nearly 400 persons. This aisle is separated from the old portion of the building by Gothic arches springing from stone pillars. The roof is open-timbered, and has a pleasing effect. In side wall are four windows; in either end is a rose window, that in the west is filled with cathedral glass, while the east one is filled with stained glass from Messrs. Wiles and Son, Newcastle-on-Tyne. The old-fashioned, high-backed pews in south aisle have been reduced and made to correspond with the new ones. The lighting of the church is well arranged: Gothic standards, nine feet high, have been placed beneath the arches separating north aisle, each standard bear-

ing nine lights. From north and south walls are hung pendants, and the organ gallery is lighted by four standards of three lights each. The chancel walls bear four tablets in memory of the Londonderry family. On Scrabo Hill, overlooking the church, is a lofty and handsome monument, erected in memory of the third marquis by his tenantry. (An illustration of this tower was given in our number for May 15, 1865.) The works were carried out by Messrs. Jennings and Johnston, under the superintendence of the architects to the Ecclesiastical Commissioners. The cost was about £2,000.

GENERAL.

For some months past, a large structure has been in progress at the junction of Lower Sheriff and Guild-street, respectively, with a frontage to former street of about 40 feet, and to the latter of 60 feet; and as it is now approaching completion, and is the largest and most attractive building of its class as yet erected in the city, a few particulars will prove acceptable. The proprietor is Mr. William Meagher, T.C., wine and spirit merchant. The style of architecture is a composition of Italian, slightly intermingled with the Mediæval element; the lower portion being finished with rusticated piers, separating spacious opens for eight windows and three doorways, and surmounted by a handsomely ornamented entablature, with coved cornice and Etruscan vases over each pier. Above this storey, which is 15 feet in height, rise two other storeys (besides the attic) displaying a red brick elevation, with segmental-headed windows, having moulded jambs and heads and white brick arches, dressings, quoins, &c., the upper storey being separated from the lower by a handsome helving course formed of chiselled granite string, with double chamfered corbels and neck moulding of white brick, the interspace being filled in, the entire length of two fronts, with encaustic tiles of appropriate pattern. A deeply moulded and bracketed main cornice with lucarned roof of steep pitch, having scalloped slating, ornamental ridge crest, and finials of metal crowning the entire. Over the angle, which is bevelled off, rises a structure of curvilinear outline in red and white brick, and with upper and lower panels filled in also with encaustics, intended to receive at a height of 55 feet from the pavement an illuminated clock, which, independent of its being an architectural accessory, is sure to be a desideratum in the locality. The internal arrangement, fittings, and decoration will be of a comprehensive and costly character, accommodation being provided on the first floor for a saloon and general meeting room 60 feet in length by 20 feet in width, irrespective of numerous other apartments, private residence, &c. The works are being carried out from the designs and under the superintendence of Mr. J. J. Lyons, architect; Mr. S. Breen the contractor for the masonry and brickwork; Mr. Kearney for the plastering, and Mr. Dolan for the encaustic tile ornamentation. The sashes on two principal fronts are filled with best British plate glass, and the ground floor windows and doors are to be closed with Clark's patent self-coiling steel shutters.

BOOKS RECEIVED.

The Theory of Strains in Girders and similar Structures.—By B. B. Stoney, B.A., Member of the Institution of Civil Engineers, and Engineer to the Corporation for Preserving and Improving the Port of Dublin. We are reluctantly obliged to hold over our review of this work until next number.

A Letter to the Rt. Hon. the Earl of Carnarvon, by the Hon. Charles Tupper, in reply to a pamphlet entitled "Confederation considered in relation to the interests of the Empire."

Report of Conference held in Manchester, 26th October, 1866, on the subject of the sale of intoxicating liquors on Sunday.

The topics discussed in the above-named pamphlet being outside the province of our paper, we must decline expressing an opinion about them.

THE HEALTH OF DUBLIN.—In the Dublin Registration District the births registered during the week ending November 24th, amounted to 137—91 boys and 82 girls. The number in the corresponding week of last year was 153. The deaths registered during the week were 188—93 males and 95 females. In the corresponding week of last year the number was 154. Fifty-three deaths from cholera were registered, being 20 less than the number registered during the previous week. Nine deaths were attributed to diarrhoea. Five deaths were caused by fever. Scarlatina proved fatal in 1 instance. One death from diphtheria, and one from measles. Whooping cough proved fatal in 3 instances. Eleven children were carried off by convulsions.

SANITARY.

It is worthy of note that the sanitary officers employed by the Public Health Committee of our Corporation are carrying out their orders in a very efficient manner, as will be seen by the following summary of duties performed by them during the preceding week:—Houses visited, 637; rooms visited, 2,180; sanitary defects remedied, 837; cautionary notices served, 215; summonses served, 61; convictions, 57; nightly lodging-houses visited, 36; slaughter-houses visited, 49; bakehouses visited, 19. Applications were sanctioned by the committee for summonses against 19 parties for neglect of sanitary requirements.

MISCELLANEOUS.

The following is a technical description of Thornycroft's equestrian statue of the Prince Consort at Wolverhampton:—"The statue is in bronze, about 9ft. in height, or, with the pedestal, nearly 16ft. The Prince Consort is represented in the uniform of a field marshal, and the attitude chosen is that of returning the salutations of the people—the prince, at the moment, gently restraining his charger, which, with open mouth, appears to be champing and playing with its bit. It was the desire of her majesty that in this, one of the series of equestrian statues by Mr. Thornycroft, the prince should be represented in military dress, although it was as a civilian that he was familiar to the view, as he was endeared to the hearts of the people. The Prince wears over the surtout the ribbon of the Order of the Garter, with the usual insignia; and the bold diagonal line which is thus presented from the shoulder to the waist forms a prominent element in the flow of his dress. There is high authority for this particular arrangement of the ribbon. Her Majesty visited Mr. Thornycroft's studio during the progress of the work, and, to insure exactness in the drapery of the figure, was graciously pleased to lend the sculptor the uniform worn by the Prince, as also the magnificent golden saddle-cloth. The Prince's favorite charger was likewise placed by the Queen at the disposal of Mr. Thornycroft, who carefully studied the anatomy of the living animal. While preserving the contour of the noble charger, the muscles and tendons are brought out in minute detail. The pedestal on which the figure is placed is of grey Dartmoor granite, the upper portion of which is polished, and has panels to receive the inscription."

ALL-ENGLAND PLOUGHING MATCHES.—On Thursday and Friday of last week the ploughing matches of the Hainton and Alford Agricultural Societies took place. Some very excellent work was produced on both occasions, as many first-class ploughmen were present, and the land showed off their ploughing to advantage. In the All-England classes, for which ploughs the champion prizes were won by Barker, ploughman to Messrs. Ransomes and Sims, of Ipswich, in the one case against nine and in the other against four competitors. The Farmers' Sons' Cup at Hainton was won by Mr. Goodyear, with a swing plough made by the same firm. Messrs. Ransomes' ploughs have won 32 All-England matches this autumn, being by far the largest number on record.—*Globe*, Nov. 19.

The artesian wells of Grenelle and Passy now emit volumes of steam; the temperature of the waters, which rise from a depth of 2,300 feet, reaching 85 degrees Fahrenheit, while that of the atmosphere at the surface by night is only 35 or 36.

It is stated that, chiefly through traders' unions and strikes, there are at present 27,000 London operatives out of work connected with shipbuilding. At the same time that French engineers bear off from us contracts for foreign ships of war, the business is moving from the Thames to the Clyde.

It is intended to forward to the Paris Exhibition a pyramid representing the space which would be occupied by all the gold produced in Australia during the last fifteen years. The height of the trophy will be 59 ft. 10 in., while at the base it will measure 10 ft. square. Its cubic capacity will be equal to 1994 ft., and it will represent a weight of 1071 tons 3 qrs. 12 lbs., of the value of £140,000,000.

The committee of a newly-formed political body, styled the "Irish Reform League" (whose aim is, we learn, to procure the extension of the franchise to the working classes, and those who contribute their quota to the taxes), having required a card for the members of their body, invited designs from eight competitors in this city. We are requested to announce that the design sent in by Mr. C. Carmody, of 29, Upper Ormond-quay, has been selected. Beneath the title of the society and an appropriate motto, in the centre of the card are represented Justice and Hibernia; on their right is shown a family leaving their ruined homestead, while on the left is depicted a crowd of emigrants leaving their country for ever. The corners of the card are ornamented with harps and shamrocks.

On lowering the floor of a house at Abernethy the other day, there was found, fully a foot below the surface, a jar containing about 400 coins, mostly of the reign of Queen Mary of Scotland. Those of her reign have a St. Andrew's Cross on the centre, with a rose on each side, with the inscription "Oppidum Edinburgum." On the reverse side there is a thistle supporting a crown, with the letters "M. R." on the side of the thistle, and the inscription "Maria, D. E. R. Scotorum." There is one with a very handsome bust of Mary, displaying the usual characteristic type of features.

PARIS EXHIBITION, 1867.—SELF-COILING SHUTTERS.—Messrs. Clark and Co. have received instructions from the commissioners for the Paris Exhibition to fix their patent self-coiling steel shutters to close all the principal openings in the building. The twelve foreign department entrances are each 15 ft. wide by 20 ft. high, and the grand entrance 28 ft. wide by 20 ft. high. All these shutters will be in one sheet of steel each.

WHY DO LEAVES FALL?—Some have said that as the leaves were gorged with sap their functions became, in consequence, impeded, and at last the leaves died and were pushed off from the tree by the current of the sap. Others have said it was the bud, that nestled in the axil of the leaf, that quietly removed the parent as itself increased in bulk—a strange theory when it is considered how many more leaves there are than buds! A third notion was, that as the leaves died mortification ensued, a line of demarcation was formed, and the dead portions became separated from the living—a notion evidently derived from the experience of the surgeon rather than from that of the vegetable anatomist. Another of these guesses, and one, apparently, which finds much favor with compilers of "popular" books, attributes the fall of the leaf to an incrustation or deposit of earthy matters in the cells of the leaf in autumn; this goes on, according to our theorists, to such an extent, that the cells become blocked up, lose their powers, hence dry up, shrivel, and fall to the ground—true enough, but not sufficient to account for all the phenomena. Several independent observers, among whom Dr. Inman, of Liverpool, is one, have arrived at the conclusion that the fall of the leaf is due to the formation of a layer of cells, arranged in a plane different from that of the rest of the tissues, thus gradually severing the leaf from its support, much as a knife blade would do, and moreover serving as a thin skin to protect the surface of what would, otherwise, be an open wound. The cells of this dividing layer, as shown by Inman and confirmed by Mohl, contain a quantity of starch, a substance not found in the adjacent cells.—*Gardeners' Chronicle*.

IRON SHIP-BUILDING IN DROGHEDA.—The progress and development of manufacturing industry (says a correspondent of the *Express*) were well illustrated to-day in the Iron Works of Messrs. Grendon and Co. A magnificent bell-boat and bell—the latter the largest diving-bell, I understand, ever constructed—both built at the works, and intended for the Dublin Ballast Board, were despatched at 11 o'clock, a.m., for the metropolis, to be used for the extension of the quays and docks of Dublin. The diving-bell is 20 ft. square, 6 ft. 6 in. in height on the outside, and put together in 25 pieces, all the joints being planed and fitted. Thickness of the metal, four inches, and the entire weight of the bell 80 tons. The tube, which is three feet in diameter, stands up from the centre of the bell 40 ft. high. At the top of the tube are two large valves, forming an air-lock, by means of which ingress and egress are had to and from the bell. The bell itself is suspended from a shears at the end of the float. The dimensions of the float are as follow:—Length, 80 ft.; width, 30 ft.; and depth, 8 ft., built entirely of iron, deck included. On the deck are two large winches for the purpose of raising or lowering the diving-bell. The machinery in the hold of the float consists of a pair of horizontal engines, used for the purpose of giving motion to the winches. Another engine is placed below to work the air pump in order to supply a constant stream of fresh air to the bell. The whole has been constructed from the designs of B. B. Stoney, Esq., engineer to the Dublin Ballast Board.

THE VARTRY WATERWORKS.—The Dublin Corporation engineer, one of the waterworks contractors, the foreman of the manufacturers of the water pipes, and one or two members of the Waterworks Committee, visited the Vartry Waterworks at Roundwood to-day, accompanied by a diver and diving apparatus, for the purpose of ascertaining the amount of injury caused by the bursting of a metal pipe at the great embankment, as reported recently in this journal. The injury is believed to be not inconsiderable, and the water in the great reservoir has been gradually lowered during the last week by about one foot per day, the catchment having, at the embankment mentioned, attained a depth of over fifty feet. Under any circumstances, the opening

of the works for the purposes of metropolitan or coast township water supply is looked on as likely to be retarded to some extent by the casualty referred to.—*Express*.

AN INSTRUCTIVE MONUMENT.—The cemetery of Montreal is alike beautiful in situation and arrangement. It stands on the mountain at a considerable distance from the city. The way to this place of the dead commands a delightful view of the valley of the St. Lawrence, which has been likened to Eden for beauty, and is well suited to cheer the mourner, as he returns from his last office to the dead, by reminding him of the better paradise, in which "there shall be no more death, nor crying, nor tears." The cemetery itself is tastefully arranged with walks and flowers, and contains many artistic monuments. One object, however, instantly strikes the eye. It is a huge pillar, built of red granite. I quickly found my way to it, that I might learn who was buried there, but was surprised by finding that no inscription was given on the tomb. The guide informed me that the stones of which it was composed had been brought all the way from Aberdeen, at great expense, by a rich Scotch gentleman who had long lived in Canada, and meant to die there. Fearing that his friends would not erect a suitable monument for him, he had built this one himself, in anticipation of the day when he would lie down to rest under its shade. I could not help thinking that there was a lesson to be learned from this strange Scotchman's work in building his own monument. Even this, that every wise man ought, in his lifetime, to erect a monument for himself, and that, in one respect at least, it should resemble this pillar—it should be an *enduring monument*, with its base on the earth and its top pointing towards heaven.—Arnold—"Across to Canada."

"WORKING" THE TELEGRAPH.—The high scale of charges which has been fixed for messages through the sub-Atlantic cables has led to the establishment of a system of "working the telegraph" by no means advantageous to the Anglo-American or Atlantic Telegraph Companies. The plan adopted is similar to that of "parcel packing" by carriers, which has been the source of so much litigation on our railways. The charge of £20 for a message of as many words—or £10 as the price is now reduced to—includes the name and address of the sender and receiver and the date of the message, thus practically limiting the number of words in the shortest message that can be sent to some 14 or 15. For instance, "Brown and Co., Broadway, New York, to Robinson, Leadenhall-street, London," takes off a very large proportion of the message, each word representing a charge, at the present reduced scale, of 10s. Now, the combination of packers in London or New York were not slow to perceive that in these names and addresses on each message there existed a very profitable field for enterprise. On either side of the Atlantic the "packers" have a number of clients for whom they transmit or receive the messages at a price considerably below the tariff of the Company. Each of these customers or clients has a corresponding figure or letter by which he is known, so that instead of sending some eight or ten words, giving the names and addresses, the message is simply "A. B." or any other two letters that may be agreed upon, the first representing the sender, the second the receiver, and thus a saving of 20 per cent. is at once effected. Beyond this, however, a very complete code is arranged between the "packers," by which the number of words in the messages is very greatly abridged. Half-a-dozen messages, for instance, directing different correspondents to buy or sell, may be "packed" in one message, and thus the repetition of many words be avoided.—*Railway News*.

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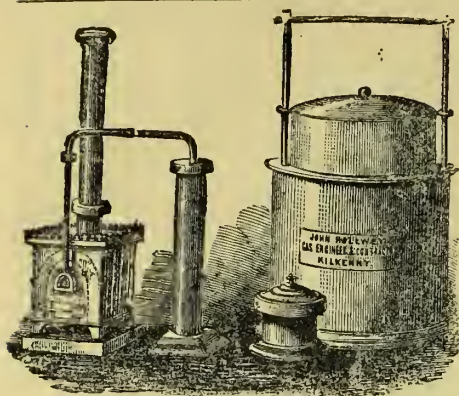
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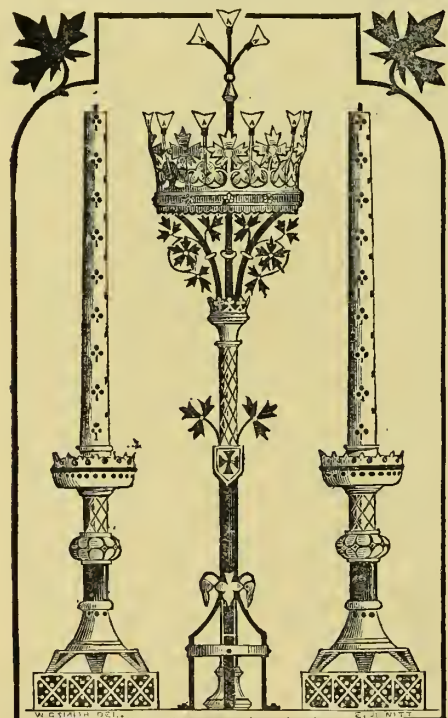
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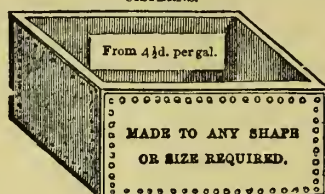
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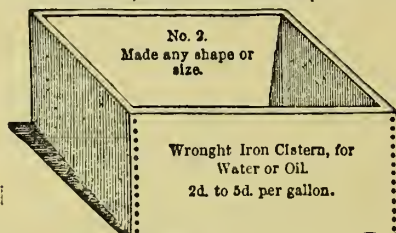
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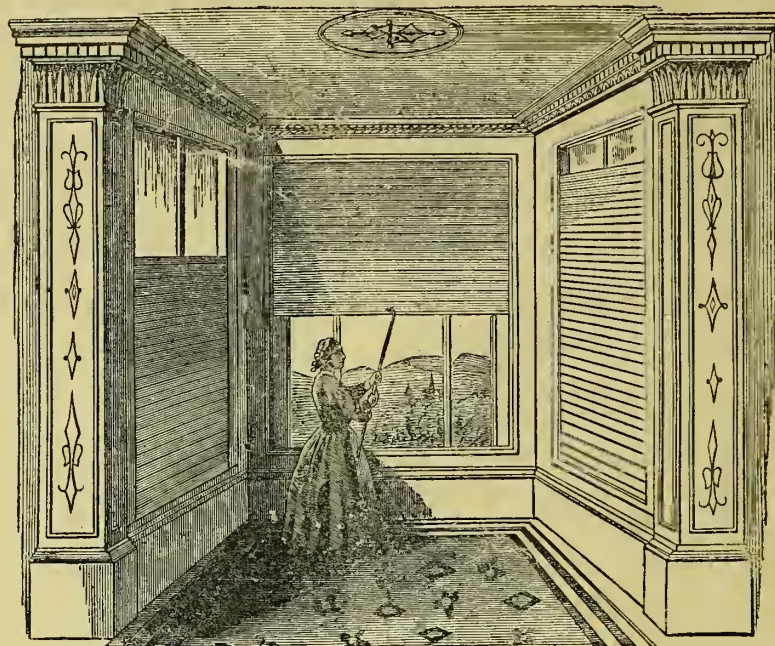
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6, East Side, Queen's Dock, Liverpool.

AUCTION OF TIMBER AND DEALS.

GEORGE BELL will SELL by AUCTION,

at his Stores, 27, SIR JOHN'S QUAY, on TUESDAY, the 18th day of DECEMBER, the Cargo now landing, ex Barque Gipsy Queen, from Quebec, consisting of:—
OAK, ASH, ELM, RED PINE, and WHITE PINE TIMBER, large sizes.

BRIGHT SPRUCE DEALS, 1st, 2nd, and 3rd quality, 10-9-3, 12-9-3, and 12-9-2.

BRIGHT PINE DEALS, 1st, 2nd and 3rd quality, 12 to 14 ft. long, 7 to 23 inches wide.

The above superior Cargo has been specially selected for the Dublin Market, and will be Sold in Lots to suit purchasers. Sale at ONE o'clock.

JAFFRAY BARCROFT and SON, Brokers.
27, Sir John's quay, Dublin,
7th December, 1866.

WOOD GOODS.—Subscriber begs to call

attention to his large and varied STOCK OF TIMBER, which he will offer at very reasonable prices, consisting of about—

30,000 Pieces SPRUCE DEALS, PLANKS, and BATTENS, all lengths to 27 feet.
700 " ST. LAWRENCE SPRUCE DEALS, &c.
5,000 " ST. LAWRENCE SPRUCE DEALS, &c.
300 Tons RED PINE TIMBER.
500 " YELLOW do.
200 " MEMEL do.
100 " SUNDSWALL do.
50 " ASH do.
20 " ELM do.
30 " OAK do.
20 Fms. 4 feet MEMEL LATHWOOD.

WILLIAM CARVILL,
CUSTOM-HOUSE, DOCKS, DUBLIN.
7th December, 1866.

CARDIFF'S BRIDGE IRON MILLS, COUNTY DUBLIN. HIGHLY IMPORTANT TO CAPITALISTS, IRON MANUFACTURERS, SPADE AND SHOVEL MAKERS, and FOUNDRYMEN generally.

SALE OF VALUABLE LEASEHOLD

INTEREST in Piece of Land, containing three acres, or thereabouts, upon which several MILLS and DWELLING-HOUSES have been erected; VALUABLE MACHINERY, PLANT, STOCK-IN-TRADE, &c.

TO BE TOLD BY AUCTION,

on the Premises,

On THURSDAY, 27th DECEMBER, 1866.

If not previously disposed of by private treaty, By directions of Mrs. CATHERINE TRELL, Executrix of the late Mr. JAMES TRELL.

The Interest in the Lease of Land, Mills, and Dwelling-houses, Machinery, Plant, &c., at Cardiff's Bridge, consisting as follows, viz:—

STEAM MILL.

with large Metal Hammer, on cast iron chairs, stand, and Portable Anvil, Iron Shaft, Metal Fly Wheel, Coupling Box, &c., Scrapping Hammer, and Plating do.; Shafting, Fly Wheel, Stands, Anvils, &c.

ROLLING MILL

contains one pair of Working Rolls, Pullars, Carriages, Boxes, and Bed; two Metal Cog Wheels, Shaft, and Coupling Box; large Shears; small do.; Shovel Sinking Press; Bevel Wheel and Crank; large Furnace and Crane; large Grindstone, and powerful Water-wheel for driving.

PLATING and SCRAPPING MILLS.

consisting of two Wheels, two Hammers, two Metal Shafts and Tappet Rings; Stand and Crane; Fires, Fan Shoots and Pipes, Punching Press, &c.

SMITH'S FORGE.

containing two pairs of Bellows, Tools, Anvil, Troughs, and Vices; Metal Block for Forging Axes; Fan Pipes, and Fan Shoots; two Scrapping Fires, &c.

FINISHING SHOP.

four Fires, and Bellows; Blocks, Anvils, Vices, Hand Punching Press, Forge Tools, &c.

All is held by lease for a term of years, 89 of which are unexpired, subject to £70 per annum; a portion of the Land, several Dwelling-houses, which let, reduces the rent to a very low sum.

The valuable Miscellaneous Machinery, Plant, and Stock-in-trade, comprises as follows, viz:—A powerful fourteen-horse power Condensing Engine and Tubular Boiler; Saw Bench, and Circular Saw Blades; smaller do.; several Grindstones, large Lathe for Iron turning, with all Fittings, Tools, Vices, &c., can be driven by steam or manual power by porter wheel; Taps, Cross-cut and Whip Saws; large Crane; six Iron Wheelbarrows; four wooden do.; four tons of old Iron Hoops; Iron and Wooden Trucks; Fittings for a Metal Water-wheel, including two Naves, twelve Segments, and Sheet-iron Buckets; large Wooden Crane; three Wooden Rollers; Stand for Screwing Bolts, Nuts, &c.; a Frame Truck, on four wheels; a pair of Iron Gates; an Oval Boiler, equal to twelve-horse power; three smaller-sized do.; a powerful Metal Sinking Press; a pair of Grooving Rolls, and four pairs of Shovel Rolls; a numerous variety of Pattern Shovels, Spades, Forks, Hooks, &c.; four tons weight of Scrap and Old Iron; 100 Bars of Plating Iron, various sizes; one ton of Bar Iron; one do. Scrap and Iron Bars, and two Groove Rollers.

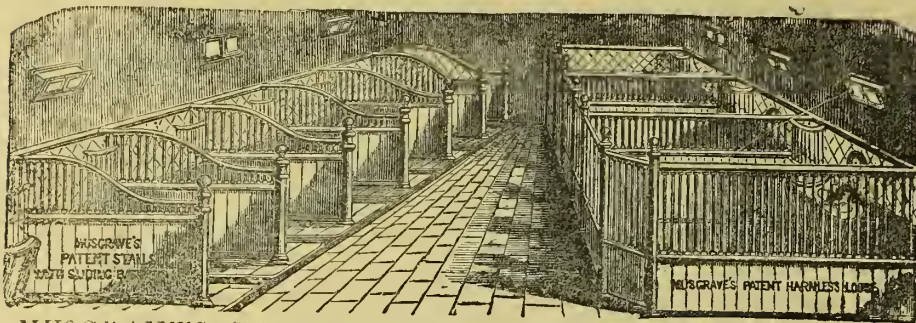
SHED and FIRE for SINKING SCAVENGING SHOVELS. Five tons of Old Metal, or thereabouts; one ton of Steel; four tons of Coal; one ton of Waste Spring Steel; Iron Palli-sading; Plate and Sheet Iron; some pieces of Elm and Ash Timber; twelve dozen Spade Handles; twenty do. Wasters; seven dozen Garden Spade Plates, half finished; twelve dozen Sligo Spades; seven dozen Gravel Shovels, various sizes; eighteen Locomotive Shovels; two large Beams, Scales, and Weights; a quantity of Old Iron, in Bar and Scrap; Metal; Round Timber, &c.

Sale to commence with Leasehold Interest at One, Machinery, Plant, &c., at half-past One o'clock; the Stock-in-trade and Miscellaneous Property immediately after. Auctioneer's Commission to be paid by purchasers. Application for Statement of Title and Conditions of Sale, to be made to JOHN MARTIN, Esq., Solicitor, No. 45, Lower Gardiner-street.

MICHAEL CROOKE, Auctioneer,
10, Lower Ormond-quay, and Navan, Co. Meath.

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This engraving represents the patent Stable Fittings adopted by His Royal Highness the Prince of Wales for the new Stables at Sandringham.



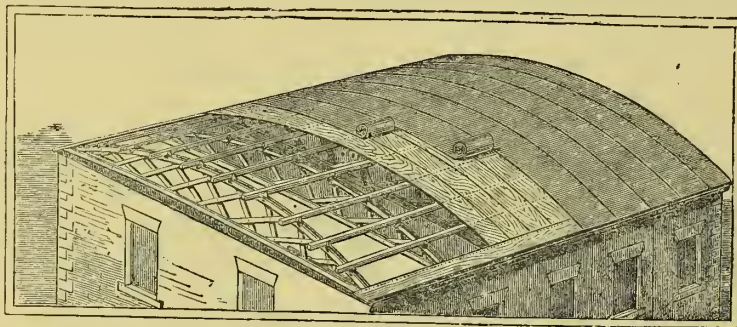
MUSGRAVE'S PATENT STABLE AND HARNESS FITTINGS.
MUSGRAVE'S PATENT HARMLESS LOOSE BOXES.
MUSGRAVE'S PATENT IRON COW STALLS & PIGGERIES.

Gentlemen who cannot inspect these fittings are requested to write for engravings, as they are unlike those of any other maker, and were admitted to excel all the work of their class in the Exhibition.
 They can be seen in first-class stables in almost every county in England; and MUSGRAVE, BROTHERS, are now fitting several very large establishments under direction of London architects, noted for employing only what is the best of its kind.
 MUSGRAVE, BROTHERS, are the only Irish firm in their department of manufactures who received the Prize Medal of the International Exhibition and of the Royal Agricultural Society of England; and the acknowledged excellence of their productions has given to their House a speciality and importance not possessed by any other, and caused them to be resorted to from England and Scotland by Architects and others who have learnt their ability to execute really reliable Work on moderate terms.

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CIRCULAR ROOF FOR GREAT ECONOMY AND CLEAR WIDE SPACE.



THE above drawing represents the durable, cheap, and handsome roof for Felt which is now so much used for covering Mills, Factories, Farm Buildings, &c.

M'TEAR and Co. have now so large a demand for these Roofs that they can erect them exceedingly cheap in the neighbourhood of any large town in Ireland, by having a regular staff of men for making and erecting them, and procuring their timber at the lowest wholesale prices at the principal depots.

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BLACK VARNISH AND COAL TAR. IMPORTERS OF TAR AND ROSIN.



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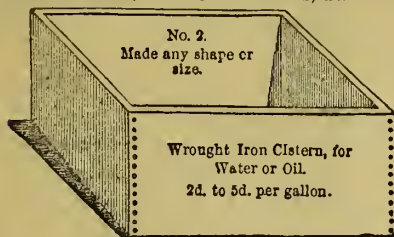
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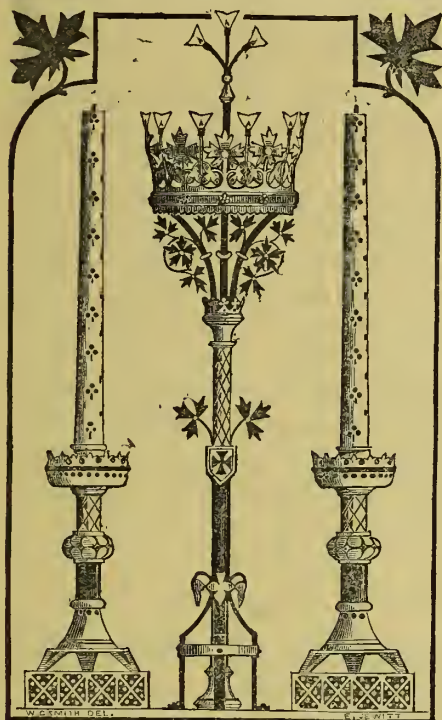
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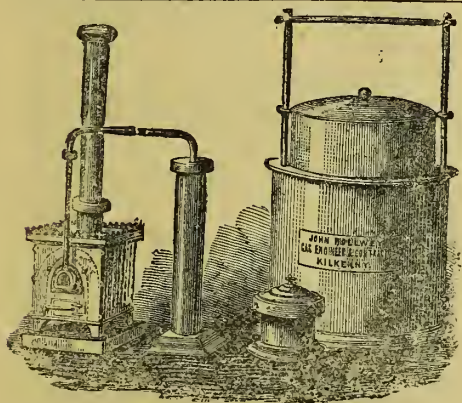
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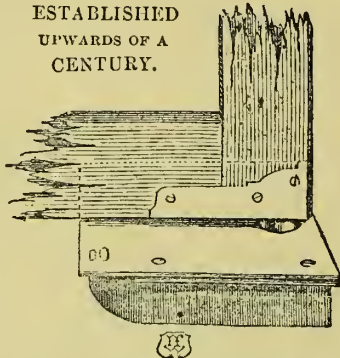
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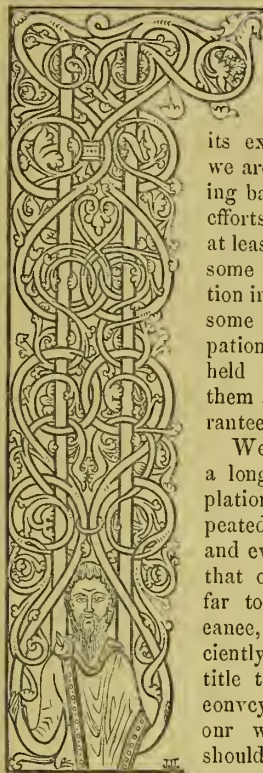
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The Dublin Builder.

VOL. VIII.—No. 168.

VÅLE, EIGHTEEN HUNDRED
AND SIXTY-SIX.



Closing with the present number of the DUBLIN BUILDER the eighth volume of its existence, we think we are justified in looking back upon our past efforts if not with pride at least with a feeling of some little self-gratulation in having realised in some degree the anticipations we have ever held out, and offering them as our surest guarantee for the future.

We have had it for a long time in contemplation, and it has repeatedly been suggested and even urged upon us, that our designation is far too local in significance, and does not sufficiently embrace by our title the information we convey. It has ever been our wish that Ireland should be thoroughly represented by us, not politically or polemically, but as the exponent of its architecture. By new arrangements we have in progress we feel we would be wanting in gratitude to many among our best and most influential supporters, metropolitan and provincial, were we to hesitate longer in announcing our intention of making an alteration in the name of this journal with the new year, still under its heretofore proprietorship, but assisted by a more numerous staff of contributors, we will issue our first and future numbers under the title of

"The Irish Builder,"
AND ENGINEERING RECORD.

Reverting to our past career, if we could review the progress made in this country during the comparatively short period of our existence, we think we should write volumes, but looking back to a time little antecedent to our date, although the Irish capital possessed many features of interest, and might have been justly proud of a few magnificent creations of "the twin sister of the arts," yet Ireland generally was reproachfully behind time in its metropolitan, suburban and provincial architecture; the claims of its private edifices and way-side structures, and we might safely add, its religious piles resting mainly upon and suggestive of the questionable taste of the architectural tyro, the amateur, and the carpenter, whose barbarous treatment in detail we can now afford to look back upon with a feeling akin to pity.

How changed, how different the aspect now! Our principal streets, our suburban and contiguous sites have been growing with a steady growth, enduring and highly artistic monuments of our age; in the palatial structures of our thoroughfares, the lordly mansions

which have been raised throughout the country, and the exquisitely tasteful villas dotted in the neighbourhood of our principal cities—all as if "by the stroke of an enchanter's wand," from their comparatively recent creation.

Need we refer to ecclesiastical art in its numerous examples, or to the creative genius which has reared the solemn temple and the traceried pile, harmonising in every detail and costly in its adornments almost fresh from the sculptor's hand, with the no less beautiful but plainer edifice exquisite in its simplicity—all dedicated to religion under different forms by the followers of the liturgy of the reformed doctrines on the one hand, and those of the gorgeous ritual of the older worship on the other? We think not, and that it would be more than invidious in us to particularise them: be it enough to remark that a taste for cultivated and refined works in architecture has been and is increasing upon us, and possibly it may be that at no distant day we will to some extent rival in this walk of art the more favoured and sunnier cities of continental Europe.

To this state of things we flatter ourselves (as journalists) we have, in a measure however remotely, contributed, by drawing the attention of our readers and the public to the best examples of Irish architects.

While upon this subject, there is a matter of some importance to us (which in referring to at all we confess it is "more in sorrow than in anger"); we cannot conceal from ourselves the fact that there exists an amount of apathy towards our publication on the part of a few who may be designated as high in their profession, which we cannot possibly account for, and although this is the exception, certainly not the rule, we can recognise no reason why it should be at all.

Ours is eminently an Irish periodical, and the only one exclusively devoted to building. It has now been several years established, primarily, no doubt, as a commercial speculation, but in the main and eventually intended to elevate and improve, by the diffusion and teaching of sound, practical, and useful information, the classes in connexion with building, and whose interests it advocates. We believe our mission has been, and is, one of much usefulness, and that with the ultimate success of our speculation all who are identified or connected with building pursuits are interested, as much for their own welfare as ours; therefore we cannot reconcile to ourselves that in this particular we should have the shadow of an excuse for complaint.

There may be a feeling, not of jealousy but of distrust, and possibly with good grounds, upon the part of a few in withholding information from us which might be eventually turned to advantage by competitors. Assuming this to be, information under such circumstances we do not need or look forward to, neither have we ever sought it; but once a contract has been signed, and once the plans are in the hands of the builder, this objection ceases to exist, and we consider it would then be neither an ungracious or ungenerous act upon the part of the architect to his client, but rather the reverse, to furnish us with a few notes descriptive or explanatory of intended works or works in progress.

Viewing our efforts in some measure as "a labour of love," we have determined, no matter under what difficulties we pursue them, zealously to continue. We have commenced with the *alpha*, and struggled with many discouraging circumstances through our infantile course, and now when increasing years and increasing experience has given us matured strength, hope beckons us forward,

whispering kind words, gently breathing sweet assurances for the future; therefore we determine, with God's will, further to persevere to the *omega* and to the end; and while bearing this in mind we resolve upon renewed exertion to render this publication worthy of the classes which it represents. In our illustrations there may have been shortcomings in the execution of a few of them (as illustrations), but from the facilities now offering we cannot anticipate a recurrence of them; at the same time we flatter ourselves we have already placed before, and will continue to produce to, our readers some of the best and most select examples of buildings in progress and in completion.

And now one word before parting for a little while with those we have ever valued as foremost among our friends—we mean the builders of Ireland. Many of them are men of the highest order of intelligence, all from their pursuits and associations are placed in position for obtaining a vast amount of information regarding constructive materials and constructive art, of which we would gladly avail ourselves. This if they would but occasionally impart—and we could point to some of them at least who if they willed it are highly competent by their education and acquirements to do so—they would form the initiative in laying the foundation for a store of valuable interest which would be of incalculable benefit, when diffused through the instrumentality of these pages among the less gifted of their brethren.

In conclusion, and in withdrawing behind the curtain for a short season until the new year calls upon our services anew, we would to our contributors each and all, who with willing hands and glad hearts ever aided us, tender our sincerest and most heartfelt acknowledgments; to our readers generally, to our subscribers, to our advertising friends, and, finally, to all who have assisted our efforts by their patronage and support, we say in the words of our heading, "*våle*" for the present, and *au revoir* in the coming year.

BOOKS RECEIVED.

The Theory of Strains in Girders and similar Structures; with Observations on the Application of Theory to Practice, and Tables of the Strength and other Properties of Materials. By B. B. Stoney, B.A., M.I.C.E., and Engineer to the Corporation for Preserving and Improving the Port of Dublin. In two volumes. Vol. I., with numerous illustrations engraved on wood, by Oldham. London: Longmans, Green, and Co., 1866.

This is a most useful work. It is seldom that scientific treatises are reduced to so compact a compass and so divested of unwieldy complications. To the architectural and engineering professions Mr. Stoney's work will prove very acceptable. The formulæ for calculating the different strains on various sorts of beams, girders, and bridges are very perspicuous. The diagrams are executed in the clearest manner—white lines on a black ground; being by far less puzzling to the eye than as usually delineated. This work furnishes the engineering and architectural student with a desideratum much looked for—a *Handbook on the Theory of Strains and the Strength of Materials*. "A thorough acquaintance with the theory of strains and the strength and other properties of materials," remarks Mr. Stoney in his preface, "forms the basis of sound engineering practice, and when this is wanting even natural constructive talent of a high order is frequently at fault, and the result is, either excess and consequent waste of material, or what is still more disastrous, weakness in parts where strength is essential." We can confidently recommend this work not only to the student, but to the profession; and the author has well employed his leisure time in its production.

ON THE PROBLEM OF PROVIDING DWELLINGS FOR THE POOR.*

THE subject of my lecture is the improvement of the dwellings of the poor in towns, and I will treat of it, if you please, in successive chapters, and will consider, first, the present position of the case. The problem of providing suitable dwellings for the labouring classes is one which has attracted a great deal of attention for many years in this country. Persons of high rank, exalted station, and great influence have lent it all the aid in their power, and more particularly in the last few years, I need scarcely remind you, there have been efforts made, based upon liberality of the most profuse kind and benevolence, certainly the most sincere and well-meaning, and which have excited a large amount of public admiration. At the same time I am bound to commence my argument by stating that in my own opinion the solution of the problem has not advanced very far. This is not a statement of mine in opposition to the opinions of others; but I repeat the conclusions at which advocates of the measure have themselves arrived, and which they have pronounced on many occasions, especially recently, with very much regret. We have the model dwellings, which are familiar to most gentlemen present. No doubt these dwellings in themselves present many features which are extremely advantageous for the occupation of the labouring class. They are thankfully accepted, we may say, by those who occupy them. They are comfortable and wholesome; they are furnished with appliances which the labouring classes generally have not at their command otherwise, and so far as those considerations go, we must all acknowledge they are highly creditable to this age and to this country. But on the other side of the account we have the complaint, which is made by the persons from whom the tenants must be selected—a complaint that the rents are so high as to be beyond their reach. We have, secondly to consider the complaint which is made by those persons who have invested their money in these buildings, who, as men of business, are obliged to say that they obtain very inadequate returns for their investment. Then, again, we have to consider the fact that these dwellings are secured by a class in a great measure altogether superior to the class for whose accommodation they were intended; so that the poor properly so called are at the present moment as unprovided for as ever. There is consequently a difficulty which impedes the progress of the problem, and that difficulty has been very simply promulgated by Lord Stanley, who, at a meeting held at the Mansion House two or three years ago, over which he presided, put the matter thus:—He pointed out that these dwellings had to be let at rents of 5s. or 6s. a week, but he said there is a large section of the labouring classes who cannot afford to pay 5s. or 6s. per week, and what is to be done for them is a problem which still requires solution; and his lordship went on to say, addressing of course a considerable assembly of influential persons interested in the cause:—“This is a question which the meeting is not called upon to solve.” Then, if we look at the proceedings of the Society of Arts, whose action is always characterized by much energy and large intentions, we find that they appointed two or three years ago a large committee of very distinguished persons with the intention of discussing the whole subject in the most complete manner, and laying before the public definite conclusions and distinct principles. I do not know whether any supplemental report has been published by that committee within the last twelve or eighteen months, but in the year 1865 I find they did publish a report, which was very instructive and significant. It was to the effect, in brief, that the building of dwellings for the labouring classes proved to be not commercially remunerative; that the returns were only five per cent., and that all the committee could do was to recommend the enforcing of sanitary laws, the encouragement of government loans, and the promotion of certain amendments in the property laws,—conclusions which I am bound to submit to this meeting are certainly not satisfactory. If this is all at which we have arrived after twenty-five or thirty years of effort, I think you will agree with me there must be a serious difficulty in the way of proper progress. Then, lately, for want of more feasible schemes, one has been brought prominently before the public in the form of a proposal for accommodating the working classes in suburban villages specially laid out, and composed of houses specially built for their accommodation. To my mind this is no solution of the problem. It is merely putting in one tangible and perhaps very proper form the question of ground rent *versus* railway fares, but beyond that I cannot see myself it goes any length towards overcoming the main points I have suggested. I venture to think, though, this is a state of things we need not

complain of; yet I think I see in this large question one that can only be met by continuous laborious endeavour, here a little and there a little contributing to some aggregate, perhaps in years, perhaps in ages, which shall amount to something like a solution of the problem. It must, I say, be solved in detail, and my present purpose in bringing the matter before the Institute of Architects is simply to explain that I fancy this is a problem best to be solved by architects themselves, if they will give their attention to it. It is true no individual profit can be attached to their efforts, but at the same time great credit may be attached to the solution of the problem, and I think that the public have a right to expect that even the most distinguished architects should give their attention to a question of so much importance.

With these remarks I now go to my second chapter, in which I propose to deal with certain statistics. The problem necessarily divides itself into two parts—first, that which deals with dwellings in the country, and secondly, that which deals with dwellings in large towns, for the labouring classes in the country are evidently one peculiarly constituted section of the community, and the labouring classes of the towns are as evidently another specially constituted section of the community, with wants of their own. We will for the present leave out of the account the question of dwellings in the country, as we shall have quite enough to do in dealing with the question of dwellings in towns to-night; but in passing, with respect to dwellings in the country, I would suggest one idea which has occurred to my own mind, not a very original one perhaps, but I give it for what it is worth, viz., whether the solution of the problem does not lie in the direction of the employment of more economical materials. I have seen cottages—cabins if you like—in the country built of wood by gentlemen of distinction and great influence, and I have found that they were built for £30 each, and constituted exceedingly comfortable homes. I will not now enter into the question of wood buildings, but merely throw out the hint for what it is worth, and pass on to our proper subject. I say, then, there are two subdivisions of the question as to town dwellings, for there are two distinct classes of that community. There is the superior class and there is the inferior class of the working population, and I shall make a distinct line of demarcation between the two. The superior class consists of journeymen mechanics earning good wages, small masters and small dealers, hour workers, and piece workers who make good incomes comparatively by work executed in their own dwellings, and there is besides a much larger class than is generally supposed of single-women workers, who make no show of business, but numerically constitute a large proportion of the class. These live sometimes alone, sometimes in pairs. Now the inferior class consists of the same sort of persons of an inferior grade—as regards income chiefly, and in some other respects; but this class includes a great mass of miscellaneous labourers so-called and hangers-on to the outskirts of businesses, who are properly speaking, *the poor*, and this inferior class is numerically greatly in the ascendant. Now, in the first place, I will speak of the dwellings of the superior classes of the working population of towns. I will take you into a modest street, say in Bloomsbury, at Islington, or Camden Town. You find the houses tidy in appearance comparatively, the street doors as a rule kept closed, and the children, who are obliged to use the street as their only playground, comfortably clad and creditable in appearance. You find these houses let out in floors. They consist ordinarily of three floors—ground, first, and second floors, with sometimes attics and sometimes kitchens, and each floor consists of the well-known two rooms, the front room being about 15 feet by 12 feet, and the back room the same size minus the width of the staircase, or about 9 ft. by 12 ft. or 13 ft. The ground-floor front room is curtailed by the width of the entrance passage. Each floor is occupied by a separate family, the back yard, water supply, water-closet, and dustbin being common to all the occupants. The front room is used as a sitting and living-room, and the back room as a bed-room. If the family consist of a pair, either with no children or only very young ones, the children may be accommodated for sleeping on a small separate bedstead in the back room with the parents, or otherwise there may be in the sitting-room a press or sofa bedstead for their accommodation. If this is not necessary for the accommodation of the children it is very often found that people of this class, who are living as they consider comfortably, have still a sofa bedstead in their sitting-room for the occasional accommodation of a guest. And these people make no complaints about the extravagance of the rents; they are respectable members of the community, and consider their position on the whole as satisfactory. I will take you into an adjoining street to this, occupied by an inferior class of workers. There one finds houses perhaps

of the same size or a little smaller. The street doors are not always kept closed, the children are numerous and not so well clad. You find these houses are not occupied in floors, but in single rooms. Each family has one room, and as a rule one room only. Occasionally, when a family is large, they must perforce occupy two rooms, and when the children are grown up and able to work they may have three rooms, but generally speaking the one room is the type of these occupations. You will thus observe that there is a radical distinction between these two classes when you remember the accommodation of the one and the other. To live in two rooms is quite a different state of things to living in one room, and that is how I consider the distinction is clearly constituted between the superior class and the inferior class, and in the wants of these two classes. I have to submit to you certain statistics which I think may be useful in the consideration of this question, and the figures I shall refer to are those of Mr. Henry Roberts, a member of this Institute, who in a paper read in 1850, which was afterwards published in a separate form, gives us these data in respect to house-to-house visitation instituted in the parish of St. George, Hanover-square, of course among the poorer classes, and it may be supposed that the class of persons constituting that community would be a fair criterion to go by. Something like 1,500 abodes were visited, and the result of the accounts kept is this:—That of families occupying three rooms and upwards—and observe, the model floor is one of three rooms—of those occupying three rooms and upwards, there were only 8½ per cent.; of those occupying two rooms, there were only 28 per cent.; and of those occupying one room, there were 63½ per cent. This brings forcibly before us one fact, which we will accept as a fact, for sentiment is quite out of place in this matter, much as it may be indulged in—a fact which I ask you to accept, that 63½ per cent. of the labouring classes occupy single rooms. Then the statistics go on to deal with the number of beds, and I think we are entitled to consider that in this respect the persons thus visited give us a fair criterion. Of those possessing three or more beds there are 13 per cent. This is an index to the size of the families which is generally misunderstood. Of those possessing two beds, there were 44 per cent.; and of those possessing one bed only there were 43 per cent. So that the rule appeared to be amongst this class of the labouring people, a small proportion only required three beds, and of the rest, one-half required two beds, and the other half required only one bed.

I now go to the third division of the subject, which will treat of the line of solution hitherto followed and the results, which I think are solvable. The line of solution is this. The worst cases have been selected as the type. We have had in the newspapers volumes of collected and demonstrative writing of all kinds about the condition and the distress of the labouring classes. Rightly or wrongly these always point to the idea I have suggested, that philanthropists accept the worst cases as the type on which they are to base their operations. It is natural they should do so; but I want you to understand it as fact. These worst cases are those of large families with the worst of conveniences. Now on the data thus impressed upon the mind what is done? A model plan is conceived for these particular cases of large families of poor communities. And let me speak here for a moment of the dogma of the three rooms. It may be highly creditable to the good feelings of all who adopt it, but it is not necessarily correct as a matter of detail. The dogma of three rooms was enunciated by Lord Shaftesbury the other day, at Nottingham, when his lordship said no decent family could be accommodated with fewer than three bedrooms. Of course we know that some families require three, but the dogma as it operates takes this form—that there ought always to be three bedrooms; and in modern-built dwellings three bedrooms is the rule, and less than three the exception. The result of this in the end is that the dwellings which are built are not tenanted by the poor. They were intended to be tenanted by the poor; they have been based upon the supposed requirements of the poor, but they do not happen to be tenanted by that class in the end. Why? Because, first, the accommodation provided is, as a matter of fact beyond their requirements. Paradoxical as this may seem, I shall show you, as a matter of fact, that the provided accommodation is beyond their wants; and, secondly, that the expense of that accommodation is beyond their means to pay for. Now let me describe what I consider to be the weakness of these model plans, and gentlemen will distinctly understand that there is no idea of disparagement in what I have to say on this point; on the contrary, no one is more anxious than I am to give all credit to every one who has concerned himself in these undertakings. But I consider we are dealing with the matter here not as a matter of courtesy and mere politeness, but as a matter of

* Address delivered before the Royal Institute of British Architects, by Mr. Robert Kerr, Monday, December 3, 1866.

fact with which we, as professional men, may concern ourselves with advantage. In describing these model plans, I will pass by what I call extravagances; for instance, the idea that a colony of these dwellings should possess public washhouses, drying-rooms, and baths, sometimes even private baths, the idea of a general lavatory and playground for the children—I pass them by; but I take the simplest form of the model itself. This gives us a living room as such, a scullery, a coal closet or pantry, often a private watercloset, a cooking range, a copper, a sink, water supply, and dust shoots, with separate and special bedrooms, three as the basis of the design, and two, or one in exceptional cases. Now, I venture to say, if the picture I have drawn of the condition of the labouring classes, the superior and the inferior, is a correct one, then I say also the plan I have just spoken of seldom applies to the superior class, and never to the inferior. The accommodation is too large and too complicated. Now, in order to economise expense, the size of the apartments I have mentioned is reduced to a minimum. The living-room is made about 12 ft. by 10 ft., the scullery 10 ft. by 7 ft., the bedrooms 12 ft. by 9 ft., 9 ft. by 5 ft., and 7 ft. by 7 ft. These dimensions are within a little of those of numerous plans; but, after all this reduction in size and accommodation, the cost is broadly and undisguisedly announced to be from £150 to £200 per dwelling. Now the comparison of cost with returns is familiar to everyone; but in addition to the returns upon this outlay we must allow for ground-rent, taxes, repairs, and attendance, that is, one person must be allowed to live rent free to devote himself to the management of the whole colony; and then we come to this, as a matter of fact furnished to us by the promoters of these excellent schemes actuated by the best attentions, that the lowest possible rents are 6s. per week. I think I may express a doubt whether any of these model houses in London stand at rents so low. I believe they are generally higher than that; but we now deal with the data, as far as they are presented, of 5s. or 6s. per week. Then even upon these terms we are told the returns are only £5 or £6 per cent. upon the capital—the Society of Arts says only £5; and this, too, with all the advantages attaching to new buildings and picked tenants, because the competition for these dwellings is so keen that the proprietors of them have nothing to do but to choose from the best classes of the people of the sort to tenant them.

[While on the subject of "Improved Dwellings for the Working Classes," it may be mentioned *en passant* that Mr. Joseph Maguire, of 6, D'Olier-street, architect, has had a number of plans prepared at his office (and which, on the occasion of a recent business visit, we had the pleasure of inspecting), for workmen's houses, and the cost of erecting them would range from £75 upwards, according to the accommodation afforded. As the Corporation of Dublin are about applying to parliament for a loan of £20,000 to build proper dwellings for the labouring classes, on each side of the city, it may not be out of place here to suggest that an inspection of Mr. Maguire's plans would be advisable.—Ed. D. B.]

LUGANURE LEAD MINES, CO. WICKLOW.*

These old mines are situated a little west of the Seven Churches, a spot well known to Irish tourists. It is here that the Avonmore receives the waters of two mountain streams, which run up for nearly two miles in deep and ravine like valleys, the mountain rising above them 1000 feet in perpendicular height. It is this lofty ridge—Comaderry—that separates the two valleys, and the main lode runs from one of them, through one mountain, into the other. It is a wild, desolate, and lonely spot in the winter, unrelieved by the stream of visitors which sets in as summer approaches.

The scenery is grand and magnificent, while the slopes and crags of the mountains are viewed, which are pleasingly contrasted with the lovely and well-wooded valleys between, glimpses of the meadows and lakes being caught everywhere through the vistas formed by the grouping of the trees. This place acquires an additional interest from the ancient ruins of the Seven Churches, amongst which that of St. Kevin seems to have been the most important. There are various other ancient remains scattered around; the whole of which have associated legends, which, though sufficiently interesting and amusing, claim no mention in a mining notice.

The two ravines of Glendasane, on the north, and of Glendalough, on the south, separate hills of considerable altitude. Lugduff, on the south, being 2176 feet high; Comaderry, 2296 feet; and Brockagh,

on the north, 1697 feet. These hills in the highest part are granite, although the mica slate attains an elevation of nearly 2000 feet. In consequence of the deep and narrow valleys the contact of the two formations can be distinctly seen from below, and traced each side up to the top of the precipice; but this line of junction is on examination by no means so perceptible as might have been supposed at first sight; it is impossible to say where the granite terminates, or the altered silurian rocks commence. The dip of the granite, and consequently of the slates which repose on it, is at an angle of about 45°.

The mica slate is here hard, dark, and often close grained, containing interstratified veins, or rather beds, of mineralized quartz. There are also some very beautiful veins of feldspar and white mica.

The granite in some respects is different from that of Cornwall, being much harder and more quartzose, and is useless as a building stone. Much of the mica also assumes a slaty appearance, though preserving its perfect cleavage. White mica and schorl are present near the junction. The white mica, or margarodite, is highly reflective, whilst the grey is apparently equally absorptive, which may account for its dull slaty look. Traces of tin have been found in the granite, as might have been expected from the presence of schorl.

The lodes, which are nearly all plumbiferous, strike north and south (true), preserve a steady direction; they are five in number, commencing west, as follow:—Luganure, Ruplagh, Hero, Moll Doyle, and Fox Rock. These all dip west from $1\frac{1}{2}$ to $2\frac{1}{2}$ feet per fathom; and the backs can be plainly seen where they cross the Glendasane ravine. There are four crosscourses intersecting these lead lodes, of which hereafter.

All these lodes are in the granite, though close to its junction with the mica schist, and no metalliferous veins have been found in the latter, if we except a small crosscourse which contains specks of copper ore.

All these lodes are grouped within the distance of half a mile, and are of the same character, showing gangue of nearly the same nature.

The Luganure lode, from which up to the present time nearly all the silver lead has been extracted, is as a rule composed of two parts; that next the foot wall principally of quartz, and containing the largest portion of the lead ore; the other part being a fine-grained decomposing elvan, inclosing scattered branches of lead ore. Sometimes the matrix replacing the quartz is fluor spar, of a light green; at other times of a brown colour, and this is especially the case at Glendalough, the southern part of the mine.

The lode varies in width, being often six feet, or even more; whilst sometimes it diminishes to a mere string; the average breadth does not exceed four feet; so that the proprietors should by no means despair if their lode be comparatively poor, as it is an axiom well known to practical miners, that if a lode "shut," it is as certain to again "open." On this principle Cornish "Tributers" act—men who only receive a tithe of what they earn for their employers: they often reap immense rewards for their experience and perseverance; and frequently, when all hope on the part of the adventurers has been abandoned, these men have been the means of the mines' resuscitation, and the making of fortunes for their unconfiding masters. We have every reason to believe that, should perseverance and confidence be displayed and practised at these mines, a most splendid future will be realized. The agents are the right men in the right place.

The Luganure Mines have been in operation for a number of years. The old Luganure Lead Mines were first worked at the head of Glendasane, where the levels were driven into the side of the mountain, one below the other, as the works increased. The levels driven south under the hill are four, and their height above the sea-level is as follows:—shallow adit, 275 fathoms; Weaver's level, 255 fathoms; Deep adit, 235 fathoms; and Richard's adit, 175 fathoms. This is the lowest level in the north side of the mountain, being only just above the bed of the river.

At this point the operations in depth were checked; and, in order to unwater the lode at a greater depth, it was necessary to go lower down the valley, and drive a crosscut. This crosscut was commenced at a place where a crosscourse intersected the valley, and would have given eighty fathoms of backs under the lowest adit. The distance, however, to be driven was over 800 fathoms. After continuing for some time, the cost was found too heavy, and the project abandoned. Forty-five fathoms were driven at the expense of £12 per fathom, and this for the whole distance would show a cost of £10,000. The time occupied in its completion would have seen, perhaps, the whole of the then shareholders in their graves.

It fortunately happened that the South Mine, or Glendalough, proved to be valuable, as the levels extending north into the hill, and on the same—or Luganure—lode were constantly approaching those

coming from the north, until at length they have met, and the whole now forms one mine. In consequence of the lode intersecting Glendalough at a lower level than in the mountain at West Luganure, the deep crosscutting was rendered unnecessary. The length of Richard's adit from the north end to its reappearance in the South Mine is 1,400 fathoms; and the whole mountain has been stowed away above this, where there was lead sufficient to pay for taking it down. The height of the upper lake, where the Luganure lode crops out, is 440 feet; these is thus a depth of nearly 100 fathoms under Richard's adit unwatered.

The levels opened under it are:—the middle, 140, and the lower eighty fathoms above the sea. Another level can be driven some fathoms deeper than this. This lode is by no means a rich one; and the successful results shown by this mine are due to the peculiar and advantageous way in which the lode can be removed.

There is no engine of any description required either for the draining of the mine, or for the drawing of its ores, which can, from the nature of the gangue, be easily and cheaply dressed. The water escapes freely at the mouths of the different adits, and the ores are drawn principally by mules, along tramways, to the entrances of the levels, and are run down an inclined railway—which communicates with all the levels—to the floors beneath. From this a splendid road has been made by the Company along the foot of the precipitous cliffs to the Seven Churches, where a good road exists to the railway station at Rathdrum, six miles east. The main workings of the mine are on this lode, which has still many fine courses of ore unworked; these bunches are not found to dip either north or south to any noticeable extent.

WEST LUGANURE.—Is a continuation of the old Luganure lode, and a shaft has been sunk in it on the north side of the stream running from Lough Nabangan, from which large rocks of lead are obtained. A thirty feet wheel, worked by this stream, clears the shaft of water, and raises the ores to grass.

RUPLAGH MINE.—Is a branch or lode east from the Luganure old lode, and bearing a few degrees east of north. This was the first lode operated on, and it returned large quantities of lead ore. The present company worked on it further north, but have abandoned it, nothing but a line of old burrows marking the spot whence so much lead was procured.

HERO MINE.—This lode intersects the valley 160 fathoms above the level of the sea, and the back crosses the old Luganure floors, now but little used. The lode is three feet wide; as yet it has yielded only small parcels of ore. They are at the present moment working the back of the sixty behind the end.

MOLL DOYLE.—This lode crosses the brook a short distance further down, at an altitude thirty fathoms less than the Hero. It is now idle; some years since a shaft was sunk on it for a few fathoms, and a level driven, but the lode was found poor and small.

FOX ROCK.—This lode has been worked for some time. It is situated just above the head of the Vale of Glendasane, where it cuts the river 500 feet above the sea level. Enormous backs can thus be had in this mine should the lode turn out well, of which there is every prospect.

The levels open on the north side of the valley in a most precipitous spot; it is therefore most difficult to construct a convenient road, the faces of these mountains being covered with boulders, some of immense size, requiring blasting to get them out of the way. The levels are driving north under the Brockagh Mountain; the leader of the lode is nearly solid lead, one foot wide. Blende of a bright reddish tinge, smooth and transparent, in thin laminae, is much mixed with it. It would appear as if this is destined to become a valuable mine. The lode for some distance is parallel and close to the junction of the granite with the slate.

Mr. J. M'Cormack has been declared contractor for works at St. Mary's Institution for Female Blind, Merrion, County Dublin. Mr. Charles Geoghegan, architect.

FOUND AT LAST.—Some important discoveries of Roman remains were made at Lydney, in Gloucestershire, not long ago, and involved a very curious incident. Amongst the remains of a temple dedicated to the god Noden found there, was a brass plate, on which was an inscription offering a reward for a ring, and stating that in the event of its being found some portion of money would be dedicated to the god Noden, but that if the person who found it failed to restore it to the owner, the curse of Noden would be upon him. Most singular to say, a ring corresponding with the lost one, and bearing the name of the person offering the reward has been found at Silchester!

* By B. Symons, in *Irish Industrial Magazine*.

THE SCULPTORS, EDWARD AND JOHN SMYTH, AND THEIR WORKS.*

HAVING alluded to those most creditable productions of art which decorate our city, and the distinguished artists by whom they have been executed, I shall now direct your attention to another interesting and happy effort, for which also we are indebted to the genius and clever manipulation of an Irish artist. The production to which I allude is the group in *basso relievo*—indeed some of the figures are so prominent that I might classify it under the style of *alto relievo*—representing the Ascension of Our Blessed Lord from amidst his revering and astonished disciples, in the apse of the semicircular ceiling over the high altar of the Metropolitan Church. It is every day subjected to your observation; but I regret to say it is not sufficiently appreciated. Its position is admirable, and it is most prominently displayed to every observer on entering beneath the portico through the centre door into the nave. At a glance the memorable event is vividly represented to the eye and impressed upon the soul, and the mysterious history is most eloquently recorded. The figures at either side and the pyramidal grouping of the entire are very good—the glory and majesty of Our ascending Lord, and the veneration and astonishment of the wondering disciples are most graphic; they are very clever and spirited in expression. The drapery also falling in flowing folds is very graceful, and exhibits a pleasing freedom, and a gentle blending harmony, and, though ample, possesses the merit not always attained, of displaying the outline and symmetry of the *contour*. The treatment of the subject is grand—and in using this epithet I believe I am not employing an exaggerated expression. The representation of Our Lord very much resembles the figure of Our Lord in Raphael's great painting of the Transfiguration, and many of the other figures bear a strong resemblance to those found in some of the works of that great master. I do not believe, however, that they are copies, and though ideas for the composition may have been derived from some of Raphael's paintings, I rather think the criticism would be too rigid which would deprive the author of the credit of originality. As an original work it is grand, and the composition possesses merits of the highest order. The effect produced is very striking—I might almost say thrilling. It is executed in stucco. Many years ago, on an occasion of the church being coloured, the figures and part of the hand of St. Simon were broken by an awkward painter. I had them restored by a figurist, but the restoration was very imperfectly effected; when viewed at a short distance from a ladder or scaffolding the defect is very apparent, but from the usual distance at which it is seen, it is scarcely perceptible. It remains that I should tell you the artist by whom it was designed and executed—the artist was Mr. John Smyth. Who was he? After the great architect, Mr. James Gandon, had executed some of the noble structures which his genius has bequeathed to our city, he anxiously sought through the three kingdoms for a sculptor willing and competent to produce statues worthy of decorating these stately specimens of architecture. For some time he sought in vain; till at length he found him in the person of an humble, retiring modest man, subsisting on very slender means in a back room in Mecklenburgh-street. This poor man was no other than the famous Mr. Edward Smyth, destined to be the future celebrity whose talents so highly elevated the character of Irish artists by the charming figures with which he ornamented the Custom House, Bank of Ireland, the Four Courts, City Hall, St. Patrick's Cathedral, and the Castle Chapel. The old figure of St. Andrew that formerly stood over the "Round Church," opposite Church-lane, was also the production of his skilful chisel.† Mr. Edward Smyth was an apprentice to, and was educated in the art by, if my memory serve me rightly, a famous Dutch artist of the name of Van Nost, who at that period resided in Dublin, and executed the figure of Justice over the Castle gate, and several other figures in the Castle. This celebrated Irish sculptor, Mr. Edward Smyth, had several sons, the eldest of whom was John. Mr. John Smyth inherited in a large degree the talents of his father, and almost rivalled him in working in stucco. He rendered his father valuable assistance in many of his works, more especially in the marble statue of Dr. Lucas in the City Hall, and the beautiful heads and other ornamentations of the Castle Chapel, and in the three figures of Wisdom, Justice, and Liberty over the pediment of the eastern portico of the Bank of Ireland. The three figures over the south portico, looking towards College-green, were designed by the London sculp-

tor, Flaxman, but were sculptured by Edward Smyth. The London artist refused to execute them for less than £500 each. The Irish artist who executed them in such superior style received but £150 each! It was Mr. John Smyth who executed the representation of the Ascension in the Metropolitan Church. An old gentleman, who professed to be conversant with its history, and who is long since dead, told me many years ago that the design of this *alto relievo* was furnished to the son, in a pen-and-ink sketch, by the father, Mr. Edward Smyth. This, however, requires confirmation, and I consider it to be not at all probable; for even the first stone of the Metropolitan Church was not laid till the year 1815, nor was the Ascension executed till the time of the death of the Most Rev. Dr. Troy, which occurred in 1823, whereas Mr. Edward Smyth, as well as I remember, died in the year 1812. The work, then, must be attributed to Mr. John Smyth; and, if the design be original, it appears to me to display a genius vastly exceeding any effort manifested even in the most beautiful of the statues left us by his father. I do not recollect that the justly-celebrated Mr. Edward Smyth left us any other specimen of his talents than what he exhibited in solitary statues. To execute a single statue well requires a high amount of artistic skill, but to aspire to perfection in grouping and composition, in order to exemplify religious or historical events, requires a vastly higher range of genius—it requires a much more extensive field of conception. The mind of the artist must grow big to seize his subject with a comprehensive and gigantic grasp. The treatment of the subject in this work of the Ascension seems to me to display all this might of conception and genius. Look at it again and again, and learn to admire and prize it. It is, indeed, worthy of the nave of our Metropolitan Church, and long may it be preserved to it; and, indeed, the nave is worthy of it—a nave which, notwithstanding the progressive taste in Irish religious structures, is even still an unrivalled gem of ecclesiastical architecture.

NEW AUGUSTINIAN CHURCH, JOHN-STREET.

With this number we have the pleasure of being enabled to present our readers with a view of the Augustinian Church, which has for the past five years been progressing towards its present partially complete state. In former numbers of our journal we have given frequent notices and particulars of this building, so that now we need do no more than refer to the general features of it as exhibited in our sketch.

The principal entrance, as will be seen, is through a deeply-recessed double doorway in the centre, the tympanum of which is to be carved with a figure of St. Augustine, &c.; over this door is a splendid eight-light traceried window of geometric design. We might remark that the detail of this window is particularly good—the molding on mullions and tracery of a very bold and varied character.

The height of nave is marked by the gable mould over west window: no portion of the nave is visible in the view, the station point being taken almost immediately in front.

The belfry stage of tower is very effective; on plan it is a parallelogram, its length being equal to double its width.

A steep roof crowns the belfry, and is terminated at a height of over 200 feet by a rich cresting and cross.

At either side of the central compartment in front is a transept, each having an entrance door, and over it a rather novel feature—a double traceried window of excellent design.

The aisles of the church present a gable in each bay, containing four-light windows of varied design; the division between the bays is marked by a buttress; the lofty clerestory is lighted by circular windows with cinquefoil cusping, two in each bay. We may congratulate the Augustinians whose untiring industry and perseverance has given us the noble church which is an ornament to the city, and will be an everlasting monument of the skill and taste of the architects, Messrs. Pugin and Ashlin.

STEAMERS ON THE GRAND CANAL.

At a recent meeting of the Institute of Civil Engineers (London) a paper by Mr. S. Healy, "On the Employment of Steam Power upon the Grand Canal," was read. It was remarked that on this system of navigation, which was 160 miles in length, the locks were 60 feet long and 13 feet 6 inches wide; a depth of 5 feet 2 inches of water being maintained upon the cills, but the trading depth of the boats was limited to 4 feet 3 inches. The width of the canal varied from 60 feet to 80 feet, shallowing at each side, so as to admit of about 30 feet of navigable breadth in the centre. Upwards of 300,000 tons of goods are carried annually over this system, in and out of Dublin. It was observed that steam power was applicable to canal navigation in either of two ways, and both had been attempted on the Grand Canal. First, by placing the machinery in the boats with the cargo; and secondly, by employing steam power merely for towing boats or barges in trains. Trials had also been made with both a single and a double screw, but the latter was deemed to be unsuitable for canal purposes. In the first effort to introduce steam power, a vessel was designed to carry cargo as well as the machinery; but her carrying capacity was found to be so reduced as to render the speculation unremunerative. Within the last two years, however, a system of hauling boats in trains, by small but powerful steamers, had been successfully brought into use on a long level of the canal, 25½ miles. The screw which had been proved to be the best, had a width of blade at the circumference of 32 inches, cut away at the base to the extent that was consistent with strength; the pitch was an increasing one, varying from 5 feet 3 inches to 7 feet 9 inches. One of these steamers towed three laden boats, each carrying 40 tons of cargo, at the rate of 2½ miles an hour; the pressure on the boiler being 60 lbs. per square inch, the number of revolutions 75 to 80 per minute, and the consumption of fuel, which was one part coal to three parts of slack, being 112 lbs. per mile. The boats were 60 feet long and 13 feet beam, drawing when laden 4 feet of water. On that portion of the canal upon which steam power had been applied, horses had now been entirely withdrawn, and two steamers regularly performed a daily service both ways. On the River Shannon, the steamers designed to carry their own cargo had to pass through locks, which limited their length to 72 feet and beam to 13 feet 3 inches. They carried 50 tons, with a draught of water of 4 feet 8 inches, and had been most successful.

IRISH SLATES.

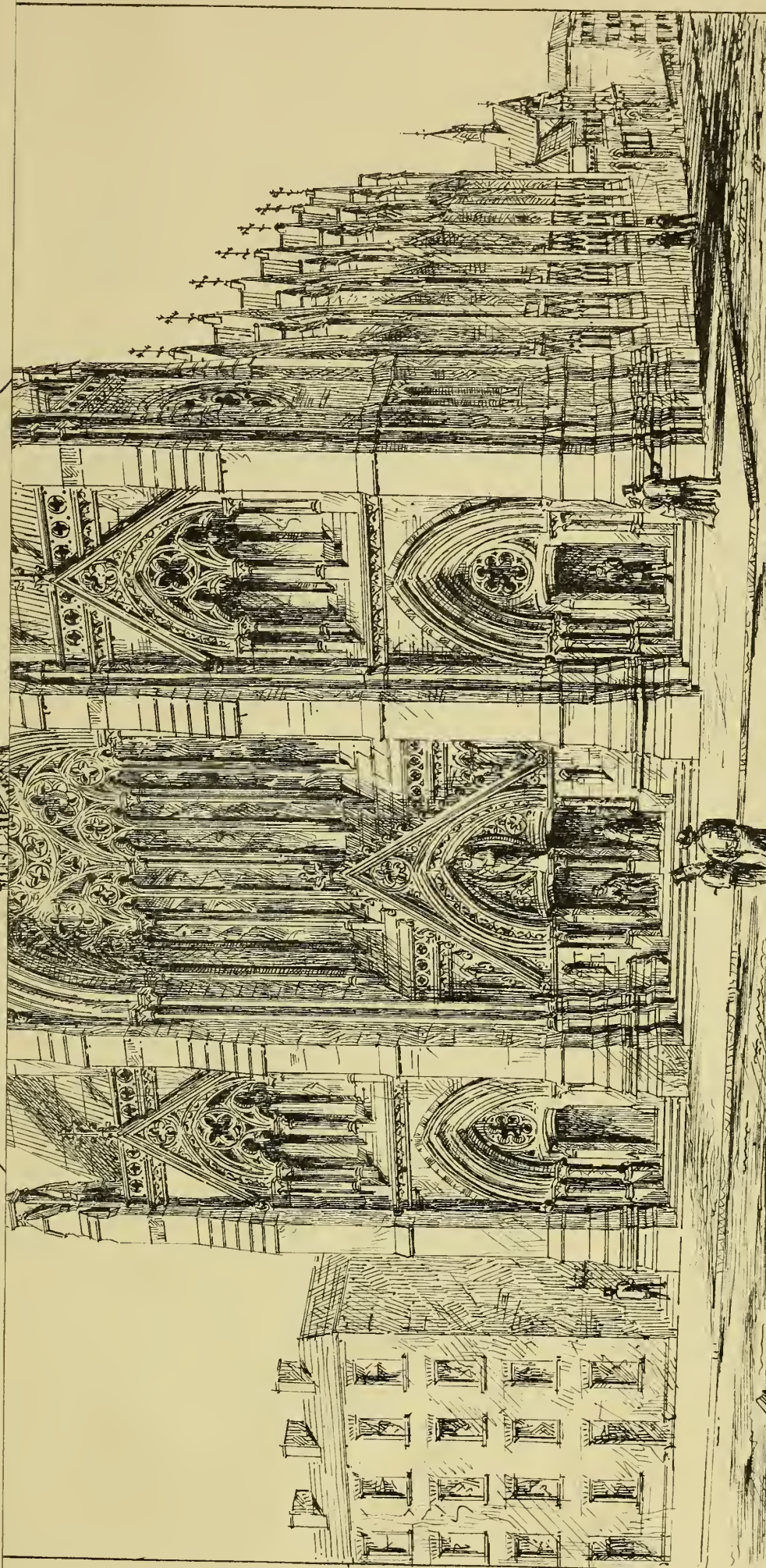
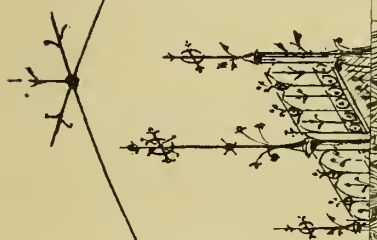
The Building News (London) of last week, in a lengthened article on "The Building Materials of Ireland," draws attention to the superior quality of slate found in all parts of our island, and to the fact that the quarry proprietors do not advertise their prices, &c., in those journals more particularly read by builders. It says:—The great advantage which the Irish slate quarries possess over the Welsh is that the slates can be sold in England and Scotland at about 40 per cent. cheaper, and this to a builder in London is no small advantage. Another point that proprietors of Irish slate quarries neglect is giving publicity to their goods. We will venture to say that of the vast number of builders in the metropolis not twenty out of the number are aware of the prices of Irish slates. Many people fancy that if their goods happen to be known in Dublin, then indeed must all the world be informed on the subject. This is a great mistake. Not one man in a thousand here interested in slates ever sees an Irish paper, and if he did he would not see the prices of Irish slates in it. Perchance a report of a meeting of the directors held in Dublin, at which grand orations have been made, dividend declared, and the dinner at Salt-hill Hotel afterwards, with the healths proposed and drunk with three times three, may meet the builder's eye; but for him it has no interest. What he wants is to know the price of Countess's, Duchess's, and Queen tons, and where he can buy them in London.

IMPORTANT!

REQUIRED in every county and town in Ireland, at least one connected with building and engineering, who will undertake to inform the editor of this journal (to be henceforth styled "THE IRISH BUILDER, and Engineering Record") of any matters occurring in their neighbourhood, and which may prove of interest to its readers. Those who are anxious mutually to benefit their own profession, and to support their only recognized organ in this country, will communicate at once to the editor, at the office, 42 Mabbott-street, Dublin.

* From Lectures on "Art," delivered before the Catholic Young Men's Society, by Canon Pope.

† This statue, since the rebuilding of St. Andrew's Church, is temporarily placed at the end of the new cloister porch. When cleaned and restored, it might find a fitting position on a pedestal near western doorway.—ED. D. B.

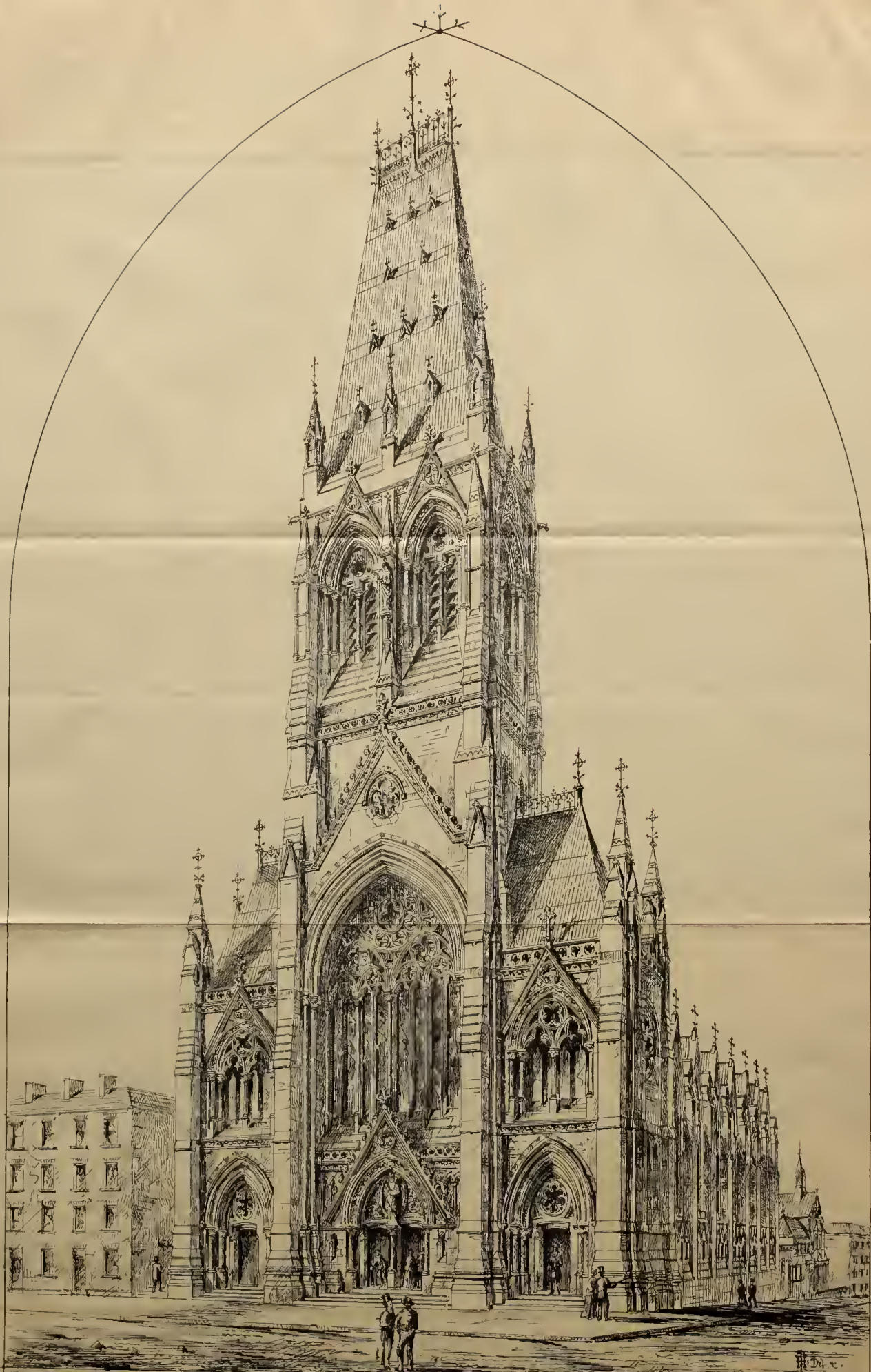


H. D. 1868

THE NEW AUSTINIAN CHURCH OF DUBLIN BY PUGIN & ASHLIN ARCHT 1868

By Debing Böttcher

16. 168. Dec. 15. 1868



THE NEW AUGUSTINIAN CHURCH DUBLIN BY PUGIN & ASHLIN ARCHITECTS

The Dublin Builder.

1868 Dec 15th 1868

CANADIAN SCENES.—VI.

BROCKVILLE, PAKENHAM, AND OTTAWA.

In the fall of 1859 A——d G——n, C.E., *ci devant*, attached to the Grand Trunk railroad at Pointe Claire, with myself and another member of that body of "professionals" who have to depend upon the *generous and confident* public for casual employment, repaired to Smith's Falls, about fifteen miles from Brockville, on the Ottawa railroad, thinking that we might stand a chance of a small contract—that line being then let out in moderate sections to suit the struggling nature of the finances of that embryo company.

Brockville.—We stayed at Brockville one night, and found it to be a town much like Tullamore, as regards population; its principal thoroughfare being a long wide street running parallel with the St. Lawrence, on which it is situated. Brockville is a very respectable looking town, considering that within the last dozen years or so it has quadrupled its inhabitants. It returns one member to the provincial parliament—an Irishman,—the Hon. George Crawford. The hotel, bank, and churches are the only public edifices worth noticing.

I called to see a Galway man (Captain W—— K——) and experienced the same friendship from him that I knew he possessed before he left the archiepiscopal city of Tuam, to settle in the backwoods of Canada West. His brother was the parish priest in Brockville at the time, and appeared to possess that kindness which his uncle also (the late Bishop Kelly, of Tuam) was endowed with.

Smith's Falls.—We put up at the Rideau Hotel, Smith's Falls, and a crowded bustling hotel we found it to be,—more like a booth at Greenwich or Donnybrook Fair in bygone days—all the time we were there, with the noise, rush and tumult of one hundred contractors, &c.

The celebrated canal (the Rideau) connecting Kingston with Ottawa, touches at Smith's Falls, and G——n, who was a keen sportsman, enjoyed some shooting here on the canal, which in many "reaches" form the natural river Rideau. Large flocks of black ducks, teal, and widgeon resort this river before winter fairly sets in, and when it does, all the feathered tribe in Canada betake themselves to the south. The musk rats are very plentiful along this river. I saw one of those curious specimens of that family one day swimming inshore, and watched the little animal get under a large pine stump. I cautiously, after the lapse of five or ten minutes, stole along keeping to leewards of the old stump, and in peeping over it discovered the rat inspecting the scooped shape of the burnt log. I immediately adopted rather an unsportsmanlike method of capturing him by striking him with a large stone on the occiput—rather a dastardly way of attacking the enemy, I must admit.

A——d G——n, and myself, and one or two others started one fine morning for Carleton place, on the Madawaska river, for the purpose of deer-stalking. The deer met with in these lonely woods may be of the same family as the *Cervus Hibernicus*, or the now almost extinct red deer of the west of Ireland. They are as fat as the prize Leicestershire ewes. Mr. W. Powell, M.P., Ottawa, runs them down in these parts with a leash of stag-hounds which he keeps for that purpose.

I missed a good chance at a buck of splendid proportions. I discharged my No. 12 bore Rigby right and left, and took down a brace of partridges, when lo! (*sacré!* would Monsieur say) up jumped a noble stag within

range, and scampered off over hill and dale towards Amprior. We had better success afterwards, as we bagged half a dozen head of large game, for which we required a much more capacious bag than is supplied to sportsmen on ordinary occasions by Messrs. Rigby and Truelock, of Dublin.

Pakenham.—Pakenham is a nicely situated village in the county of Lanark or Renfrew. It is seated on the Mississippi river (if I recollect aright). It boasts of a church, chapel, and Methodist preaching house; the church commands a fine view of the valley of the river below the town. There are very extensive mills. I predict a glorious future for this little town. The railway from Brockville to Amprior passes here, and appears to be well laid out by Mr. A. Keefer, or as the Yankees say, "located." Let us hope that it has not been hastily constructed on the *cheap and nasty* principle of our American cousins.

A——d G——n and myself, put up with a Castlebar man of the name of Mackeon, heretofore a sizar of Trinity College, Dublin, who kept the principal inn at Pakenham. As the season was so far advanced, we thought it better to proceed to Bytown, now called Ottawa.

Ottawa.—The city of Ottawa now-a-days was some eight years ago called Bytown, after Colonel By, of the Royal Engineers, who was the government engineer that constructed the Rideau canal, which was thought at the time a necessary work in a *military* point of view, as, in case of a war with the United States, should the then seat of government, Kingston, be beleaguered, the government archives, stores, &c., could be safely conveyed to Bytown by canal.

Ten years ago this Ottawa was as sorry a looking town as one might find out in North America. The stranger, when walking through its wide thoroughfares, would discover nothing in it but a nest of "shanties"—(small wooden cribs putting up; each of those dwellings could be easily put together in three or four days, for from twenty to thirty dollars, and then would be habitable for Jean Baptiste and his sponse, or Paddy and Molly, with their lap dog, the infant porker); and gangs of fierce-looking "bushwhackers," *alapromenade*, with their axes bright and well whittled over their shoulders, preparatory to a start for about 100 miles into the virgin forest.

It is not the intention of the writer to impugn those ill advisers who recommended our gracious Majesty to select Ottawa as the seat of government instead of old Stadacona (Quebec) or Hochelaga (Montreal). Quebec, from her impregnable position—domineering over the St. Lawrence,—must be eventually selected as the capital (seat of government) of the British North American Confederation.

Ottawa may then continue her sittings of the different members of parliament for the Upper Province, similar to the plan adopted in the United States for each state to have its own house of representatives, but sending two or more members to congress, or Washington.

The seat of government, when fixed on Ottawa, gave great dissatisfaction at the time, particularly to those French counties north and east of Quebec.

The site of Ottawa is not unlike Quebec, approaching it by the river. The government buildings I should say are very fine to look at on paper; whether the nature of the stone selected be affected by the climate ten or twenty years hence from this date, is another question. It may be that, like the Chaudiere railway bridge near Quebec—they may appear to the eye of the inexperienced sound and faultless externally, and be internally made up

of old bones, dilapidated brickbats and jack-asses skulls! 'Tis a fact that when "auld Cloutie" had the erection of this bridge, all sorts of vile stuff made up the piers and abutments. I predict that a dozen years at farthest will be the limit to the present life of that bridge; the traffic must then cease, *via* Richmond to Portland and Montreal, till those piers are built of substantial and sound stone, instead of the perishable masonry that was used. Every time a freshet occurs in the Chaudiere river the water rushes into every gap, cranny, and interstice in the piers and abutments, and for days afterwards it is seen gurgling out of every fissure in that frail structure.

Excuse the last digression. I went to see the Chaudiere Falls at Ottawa, and think them very inferior to the falls of the same name below the bridge, described in the last paragraph. The word Chaudiere is not misapplied (in the heat of summer)—in Canadian-French it signifies a boiling kettle or cauldron.

Ottawa possesses little in the imagination of the transient tourist, to entitle it to be considered the capital of the Canadas. To a stranger, as I was then, eight or nine years ago, she seemed to have no expectations whatever of the future greatness that was to be thrust upon her. Even its hotels and restaurants are second class when compared with the St. Lawrence Hall at Montreal, or the Clarendon at Quebec. Yet, notwithstanding, my Lord Elgin or Sir Edmund Head recommends Mr. Cardwell or the Duke of Newcastle to advise her Majesty to make this village of bushwhackers the seat of the intellect and wisdom of Canada.

There was then living in Bytown (which he and his countrymen made their home) John Egan, of Sligo, who made a handsome fortune out here in his early days. He was, to look at, the *beau ideal* of a man; he was tall, straight, handsome, and well made; he was thought much of when I knew him. He died suddenly, just in the prime of life. Let us hope his memory will remain green in the hearts of those he has left after him in Ottawa.

The life the "lumberman" leads during the extreme rigour of a Canadian winter is attended with much hardship such as is nowhere else experienced by the mere working man. A lumberer sets out from Ottawa when the frost has made the Grande Riviere (Ottawa) the highway for pedestrians to the virgin forest along its numerous tributaries with a company of 80 or 100 lumbermen, half-a-dozen or more horses, who carry on sleighs and carriages about 12,000 lbs. of prime mess pork, and about 30 cwt. of flour, besides sundry chests of tea and barrels of sugar, with a moderate allowance of tobacco and pipes, the former first-class Virginia honeydew, at about 2s. per pound, and a barrel of Upper Canada whiskey, very good, at 2s. 6d. per gallon.

These lumbermen lead a very happy life in the bush; they are very handy fellows with the axe, and put together their winter dwellings very expeditiously—say in twenty-four hours a hundred men would construct quite a village of those "shanties," as the timber is within reach everywhere; the workmanship would be of course of the simplest and most serviceable design.

Great fun is experienced if there are any hares about, which turn snow white every winter in this climate. They are caught by means of a copper snare set where they pass, which is easily discovered on the snow. The partridges also give some amusement to the

pot hunter. They in appearance are more like the grouse of Europe; they have the feathered legs, but the plumage, though like in the delicate variety of its tints, is not near as dark or as pretty as our grouse at home. The fact is, the partridges of Canada are undeserving the name, as they afford no sport at all to the sportsman. A person may, in fifteen or twenty minutes, fill his bag with a whole family of those foolish birds; he fires the first shot at a silly bird of this kind perched on the limb of a spruce hard by, and before the fowler shifts his position he may take down one after another, the whole family, including parents as well.

I sojourned a few days in Ottawa, and was moderately and handsomely entertained at Mathews' Hotel. I travelled back to Montreal by the Prescott and Bytown railroad. This line is made most of the way through the bush; it is almost an air line, and was, I believe, the first railway the Canadians undertook to build. The engineer (Mr. Shanley) is a fellow-countryman of my own, and was afterwards appointed manager of the Grand Trunk Railway, in the place of Mr. Bidder, superseded.

It was a very severe winter night when I got into Montreal. The St. Lawrence was frozen right across opposite the city.

There was some difficulty in getting over to the railway station at Longueville just now, as the ice was not strong enough for sleighing, and where the river remained still open—below St. Helen's Island—there was some danger in venturing across in a canoe. Yet Sir C—k R—y and lady with myself, &c., on a dark snowy morning near Christmas, undertook the crossing of the river. Our canoe-men guided the canoe steadily through the fields of ice which were rapidly forming on the river. At length a mass of floating ice, partly submerged, got under and nearly upset our frail gondola with all on board, including her ladyship, who was fortunately preserved in her position by the dexterous canoe-men, who were mostly French Canadians, and possessed all that gallantry for which their countrymen of La belle France are so distinguished; but on this occasion showed little respect or sympathy for the male passengers; though one of them was a knight itself, he had to "paddle his own canoe."

I, with the rest of the male passengers, had to jump out of the canoe on the sheet of submerged ice, up to the knees in water 30° below zero. We were so situated till the craft was righted, when we resumed our seats again and were hauled ashore more dead than alive, our clothes standing out rigidly, the water becoming ice instantaneously!

I made an effort to get into the post-office carriage on the railway to Richmond, where there was a stove, and managed to get tolerably warm and dry before we reached Richmond.

I will close these imperfect sketches with a proviso to continue my impressions of that part of the United States, Philadelphia, New York, &c.

Dundalk, December 8th, 1866.

OUR GAS.

CONSEQUENT on the recent amalgamation of the gas companies in this city, and the increased demand for gas of a higher illuminating power, the new directorate have been obliged to lay down larger mains than formerly. During the progress of the necessary works the supply of gas in some districts has been very limited. The following communication from the secretary of the company will explain itself:—

TO THE EDITOR OF THE DUBLIN BUILDER.

SIR,—The supply of gas to one or two districts being at present insufficient, partly owing to the alterations consequent

on the re-organization of the leading mains, and partly to the disorganization of some of the workmen at one of the stations, I have on the part of the directors, most respectfully to crave the indulgence and forbearance of the consumers for a few evenings more, when I hope the company will be in a position to meet all the demands and requirements of the citizens. As some of our friends appear to be under the impression that the present state of things is the result of the recent Act of Parliament, authorizing the amalgamation of the companies, and that, in consequence of the absence of competition, the existing gas company has become careless of opinion and indifferent to the wants and convenience of the public, I think it only due to the directors to state that such an inference or conclusion is entirely erroneous. Indeed, the very contrary is the fact, the board of directors being one and all impressed with the conviction that it is not alone their duty but their interest to remove all ground of complaint. This, I repeat, is the most anxious desire of the board, and to effect that object neither labour nor expense is being spared to give the citizens all the advantages of the act of last session, which makes it compulsory on the company to supply gas of a very superior quality without any additional cost to the consumer. In proof of this I need only refer to the monster mains, 36 inches in diameter, now in course of junction with the leading mains of both companies at Carlisle-bridge, at a cost of upwards of £8,000. The act will take effect on the 1st of January next, when, I have no doubt, the citizens will have good reason to be satisfied with its operation.—I have the honour to be, sir, your obedient servant,

JOHN STEVENSON, Sec.
Alliance and Consumers' Gas Company,
Offices, 114, Grafton-street.

ASBESTUS AND ITS NEW SOURCE.

To many of our readers not thoroughly up in mineralogy, and who of this peculiar substance have perhaps never heard anything beyond its mere name, and at a time like the present, when it is proposed to apply it more extensively in assisting some of the manufacturing arts, as well as when we hear from our antipodes that a large source has been discovered in those regions, it is not out of place to give the following brief *resumé*.

Asbestos, from the Greek adjective *ασβεστος*, signifying "inconsumable," is the name now given to the varieties of the hornblende or amphibole family, such as augite, tremolite, and actinolite, which occur in fibrous and radiated aggregates, but found chiefly in connection with serpentines. The term *amianthus* is frequently employed as synonymous with asbestos; this latter, however, includes more correctly those varieties which occur in delicate and regular silky fibres.

It is found abroad in Piedmont, Savoy, Salzburg, the Tyrol, Dauphiné, Hungary, Silesia, as well as in Corsica, the United States, and in Greenland, also in some of the islands north of Scotland; whilst at home it is met with in Aberdeenshire and at St. Kevern in Cornwall; and some years ago a supply was discovered near Newton Bushell in Devonshire, though we believe its extent in this last instance has never been as yet ascertained.

Besides the technical division of the several varieties of this mineral, it has received other names, which have been accorded in reference more especially to appearance and quality, such as *rock-wood*, *rock-cork*, *mountain leather*, *fossil paper*, *fossil flax*, and so on. In rock-wood the fibres are long, curved, and compact, and lie parallel to one another; in rock-cork they have a felted texture, and are so light that they float on water; and in mountain leather the fibres are aggregated in flat flexible pieces; whilst in fossil flax they are so loose and soft that the mineral has been used as a material for packing easily frangible articles; amongst others, Dolomieu used it for packing his other mineralogical specimens. Thus it will be seen that asbestos is found to exist in all grades, passing from the silky flexibility of amianthus to a degree of compactness which admits of receiving a fine polish.

Asbestos appears to have been especially familiar to the ancients, who manufactured it into cloth, which they used for certain domestic purposes, as napkins, gloves; and it was employed by them, too, as a wick for the lamps used in temple worship, to which latter purpose it is still applied by the native Greenlanders.

In more modern times, amianthus has on several occasions been manufactured into small fancy fabrics, and it is still used for such purposes in Siberia, Italy, and the Pyrenees. An Italian, Chevalier Aldini, constructed pieces of dress which are inconsumable. Those for the body, arms, and legs, were formed out of strong cloth steeped in a solution of alum; while those for the head, hands, and feet were made of asbestos. A piece of ancient asbestos cloth, preserved in the Vatican, appears to have been made by intermingling asbestos with other fibrous substances. M. Aldini has, however, much advanced upon this, as he has constructed a piece of cloth nearly as large, entirely of this mineral. The fibres were prevented from being broken by being acted upon in some untold way by steam.

In addition to the uses we have mentioned, asbestos is now generally used by chemists for filling their gas-grates, the fibres remaining red-hot without being consumed; and attempts, although unsuc-

cessful, have been made to produce from it an inconsumable paper.

The last proposal comes to us from abroad in the following abstract from a correspondent of an Australian paper (the *Orange Guardian*), who writes:—"Some twenty-two years ago I recognized the asbestos or amianthus rock in this district, and since then I have from time to time exposed portions of the stone to atmospheric influence, and the result has always been a perfect change of the stone into asbestos, or into a substance closely resembling the finest staple of wool, only something stronger, and, if possible, whiter in appearance. I have sometimes observed it six inches in length, have combed it out, and found it as soft and pliant as any silk. This substance, as no doubt you are aware, is inconsumable by fire. The stone may be brought into the state of asbestos in a very short time. I have been sinking a well of late, and some days I got as much of this mineral as would make a suit of clothes. I can show the stone here in all its stages, from stone itself to the asbestos state. Should asbestos ever come into general use it will, in some measure no doubt, from its inconsumable nature, supersede the evils of crinoline. Besides this great advantage, it will set aside the vexatious expense and use of soap and water, for all a lady will have to do when she unrobes herself will be to pitch her articles of apparel into a glowing fire, and when they become as white as a snow-flake she may resume them at her pleasure. Perhaps you may deem some parts of the foregoing rather extravagant, but nevertheless, I really believe that by proper appliances the amianthus may yet become a source of revenue, and I therefore recommend the thing to your attention."

Without at all seeing our way to endorse the whole of this correspondent's anticipations, it appears extremely probable that ere very long a larger field for the employment of asbestos will be opened out in some parts of the manufacturing world. It is now being used as packing in the stuffing boxes of the necks of some revolving retorts in chemical works.—V. D. in *Prac. Mech's Journal*.

EXPERIMENTS WITH NITRO-GLYCERINE.

A SERIES of experiments conducted by Colonel Shaffner, at Washington, extending over a period of four days, seems to confirm the fact that the explosive qualities of nitro-glycerine are far in advance of those of gunpowder. Amongst other trials two open targets, six feet long and five feet high, were made of two thicknesses of two and a half inch oak plank, and placed vertically four feet apart in a pit, the sides of which were of stiff clay, and extending two feet above the structures. The floor between was an iron plate resting on timbers, and one side of the targets was lined with a plate of iron one-fourth of an inch thick. Of course the top and ends of this two-sided box were open. In each of two similar structures was placed a tin canister of a capacity of 300 cubic inches, one filled with gunpowder, and the other with about eight pounds of nitro-glycerine or nitrolem, as the colonel calls it. Being exploded, the powder did not disfigure the structure, except to colour it with the deposit of carbon upon its sides and floor. The nitro-glycerine tore the wood-work to pieces and threw fragments very high in the air. The iron floor was removed from its place and thrown upon its end, and the earth around was very much torn. Two cast-iron pieces, weighing each about 300 pounds, had a hole an inch in diameter, and fifteen inches deep, bored in them, and after being charged, one with powder and the other with nitro-glycerine, they were closed by a screw plug one inch long. That containing the powder was uninjured, the powder discharged through the fuse vent, three-sixteenths of an inch diameter. The other was torn to pieces by the nitro-glycerine, the force extending downward from the bottom of the charge, leaving a cone with its apex at the bottom of the drill hole. But one of the most remarkable of the experiments was one with a wrought-iron piece, being part of a shaft, about five feet long and twelve inches in diameter. In this was bored a hole fifteen inches deep, one inch in diameter, and a plug one inch long screwed in the orifice. The plug was forced from the orifice, and the music of the air passing through the vent-hole lasted three minutes; it evidently reached a very high altitude. A second charge, tamped with loose earth, burst the iron into three pieces to the base of the drill. The pieces were subsequently examined, and they were found to be crystallized, and to a considerable extent restored to cast iron. Subsequently the bore was deepened to twenty inches, and the aperture secured by a plug screwed in three inches. Twelve liquid ounces of nitro-glycerine were poured in, and the charge ignited by electricity. The wrought-iron shaft was broken to pieces and the crystallized effect was clearly visible. This curious phenomenon is worthy of the most intelligent examination. Never before has wrought iron been made to change to a

crystallized state by one blow. The chamber was greatly enlarged, indicating a compression of the metal. Four musket barrels were placed in wrought iron cylinders, two filled with gunpowder and two filled one-third full with nitro-leum. The musket barrels charged with powder were exploded by electricity. They burst open, tearing the iron to pieces. The barrels charged with nitro-glycerine were next exploded, and the effect was very different from that produced by the powder. The barrels were flattened, and not so much broken to pieces; the force was so sudden and great that after the barrel had irregularly broken up and down, the iron appeared like rolled plate, even and polished. In testing other qualities of the nitro-glycerine, Colonel Shaffner says:—Plaster of Paris was saturated with it, and it proved to be non-explosive and non-combustible. Sawdust was placed upon the anvil under the hammer, but there was no explosion except as particles of nitro-glycerine. Gun-cotton was placed upon the anvil covered with the liquid, and the explosion on the fall of the hammer failed to ignite the cotton. During my experiments, Gen. Dellafield and other officers were not too timid to handle the nitro-glycerine in a tumbler, and those present saw me use it with as much freedom as though it was water. It is proper to state, however, that like all explosive compounds it should be handled with that degree of caution peculiar to its character. For example, when unconfined it may be stirred with a red hot iron containing some 600 degrees of heat; but if that heat was applied to it when confined it would explode. The explosive force of powder is estimated to be 13,000 pounds to the square inch, and by chemical formula the explosive force of nitro-glycerine is about 212,000 pounds to the square inch. I also exhibited to the officers present the cause of the recent explosion at San Francisco. The nitro-glycerine had been shipped in bottles and packed in sawdust, four bottles in each case; one or more of the bottles had been broken, and the sawdust became saturated with the liquid; and in this manner a new liquid was formed which is susceptible of being exploded at a lower temperature than nitro-glycerine, and possibly at blood heat. The agents were opening the package, and perhaps a heavy blow was given particles of sawdust, which caused the explosion. Nitro-glycerine explodes by a violent percussion, and by 360 degrees of heat.

THE O'CONNELL MONUMENT.

SOME weeks ago we announced that Mr. J. H. Foley had consented to furnish a "model design" for the O'Connell National Monument. From the following recent correspondence our readers will perceive that the design is in "active progress," and will soon be despatched to the Hon. Sec.:

TO THE EDITOR OF THE FREEMAN.

Dec. 7, 1866.

DEAR SIR,—In consequence of the numerous and constant inquiries which are made of me in reference to the O'Connell Monument, I felt it my duty to write to Mr. Foley on the subject. That gentleman has favoured me with a reply, a copy of which I enclose for the satisfaction of the public.

MARTIN CREAN, Hon. Sec.

London, Dec. 1, 1866.

MY DEAR SIR,—In reply to your letter, I am enabled to state that the design for the O'Connell Monument is in active progress, and for the early completion of which I am striving, in order to compensate as far as possible for the delay which has already occurred in the realisation of the project—a delay over which I have had no control. All interested in the success of the work must view it as an undertaking too important in character to be decided upon hastily, and I scarcely anticipated by this date any symptoms of impatience as to the appearance of the design, which, for the satisfaction of the committee, should, I think, be submitted as a model—a model being more explicit of the meaning and effect than a drawing. I need scarcely add that the former occupies much more time in preparing than the latter. I therefore trust you will be assured that as soon as the design reaches a satisfactory state, I shall have much pleasure in its earliest despatch to you.

Martin Crean, Esq.

J. H. FOLEY.

PARAFFIN OIL.

THE great extension of paraffin oil works, both crude and refined, during the last few years, has led to attention being directed to the nature of the discharges which emanate from such, more especially to those matters which find their way into rivers which form the natural drainage of the district. The deleterious nature of these discharges has manifested itself already in the total destruction of all fish in more than one of our Scottish streams, and in the impregnation of the water with paraffin oil and the products of its rectification to such an extent as to impart the characteristic taste and odour of paraffin to the water, and

render it unsuitable for domestic purposes. I have had occasion to make a large number of experiments on such discharges, taken alone and diluted with much water, with the view of testing the destructive nature of these liquids and mixtures upon the life of fish, and the general results of the inquiry I propose to bring forward. The discharges from the paraffin oil works are of the following nature:—1. Crude petroleum and shale oil escaping from the crude oil casks, either when full or when empty, when the drainings leak away into the surrounding soil, and thence to the drains. 2. The condensing water from the worms of the crude and refining stills, which often passes away impregnated with paraffin oil. 3. The spent acid liquor which has been used in acting upon the crude petroleum or shale oil. 4. The spent alkaline liquor or soda which has been employed in acting upon the oil which has been previously treated with acid. Besides these there is the accidental overflow of the retorts both during the first redistillation of the crude oil, and subsequently in the distillation of the refined oil, and which can hardly be altogether provided against. The drainings from the oil casks, when the latter have been emptied and are exposed to the sun, are considerable when a number of casks are stored together, and the oil which percolates through the soil is liable not only to ooze through the ground, but when the rain falls, the oil floats thereupon, and is thus carried into the ordinary drains. Any material damage to rivers, however, from this cause may be lessened by providing proper surface drains, which carry all the oily water to traps, where it settles, and the oil may be removed from the surface whilst the water is run off underneath. The condensing water from the stills is liable to be impregnated with paraffin oil from the leakage of the pipes, which is greater when the pipes are of cast iron than when they are constructed of malleable iron. Of course any excessive leakage is quickly arrested, but there is generally that taint communicated to the water which, independent of the lesser proportion of oxygen dissolved in the water, as compared with ordinary river water, renders the water more or less deleterious to the health of fish. The spent acid liquor and the spent soda liquor, however, are the most serious discharges which either regularly or occasionally escape from paraffin oil works, and their influence upon the health and life of fish is much more decided than the paraffin oil itself. The spent acid liquor consists of the sulphuric acid which has been added to the crude oil, accompanied by tar products, including pitch and other basic oils, and to which the acid liquor no doubt owes part of its poisonous properties. Whilst now the material in question is to some extent utilised by separating the tar, and either mixing it with spent oak bark or sawdust, and using it as a fuel, or by distilling it into pitch, yet occasionally this acid liquor is discharged into a neighbouring stream. It is a black tarry liquid, of the consistence of molasses, with a somewhat sulphurous odour, and a very small quantity added to water confers upon the latter poisonous properties. In one instance, I found this spent acid liquor which was collected, somewhat diluted with water, to possess the following powerful effects upon fish:—1. When the liquor was taken by itself, and fish immersed therein, they were dead in five minutes. 2. When the liquor was diluted with three times its volume of good stream water, and fish introduced into the mixture, they were killed in ten minutes. 3. With one of the liquid and twenty of water the fish died in fifteen minutes. 4. One of the liquor and 100 of water killed the fish in fifteen to twenty minutes. 5. One of the liquid and 1,000 of water was poisonous to the fish in two hours; whilst in one of the liquor to 10,000 of water, the fish were not killed by their immersion in the mixed liquid for twenty-four hours, but were apparently sick and prostrate. The spent soda liquor which has been employed in treating the oil which had been previously acted upon by acid, is necessarily decidedly alkaline and caustic in its nature. It has been extracted from the oil, and retains in solution, more or less carbolic acid and its homologues, and the poisonous nature of the spent soda liquor is doubtless materially augmented by the presence of these acids. One sample of this soda liquor which was flowing from a paraffin oil work, and which contained extra water, proved destructive to fish in ten minutes; diluted with three parts of water, it killed fish in twenty minutes; with twenty of water the fish were dead in twenty-five; with 100 of water the fish were killed in thirty minutes; diluted with a thousand times its volume of water, the soda liquor was destructive to fish in twenty hours; whilst in 10,000 parts of water the fish were not killed, but were apparently slightly sick. Experiments were also made with crude shale oil and the refined oil obtained therefrom, and with Pennsylvanian petroleum and the refined oils extracted from it:—The crude shale oil was destructive to fish when taken in the proportion of one of the oil to 1,000 of water; the crude oil being more energetic in its action than any of the others, then in succession the lubricating oil, the burning oil, and the lighter spirit.

The Pennsylvanian petroleum was not so powerful in its poisonous properties as the shale oil employed in the experiments. The crude shale oil, in the proportion of 1 to 1,000 of water, was poisonous to fish in twelve hours, whilst the crude Pennsylvanian oil, in the same proportion did not kill the fish in twenty-four hours. The refined oils acted in a corresponding manner on fish; thus the refined shale oil, in the portion of 1 to 1,000 of water, killed the fish in twenty-four hours, whilst the refined Pennsylvanian oil did not prove destructive till two days. The importance of this subject will probably soon be greater than it is at present, as the manufacture of crude paraffin oil, in conjunction with gas, has already been introduced into one of our gas works in Scotland. The coal used in the Newbattle gas or Cannel coal, yields, when distilled in ordinary gas retorts, at a bright cherry-red heat, about 11,000 cubic feet of gas, with an illuminating or photogenic power of thirty-four standard sperm candles for every five cubic feet of oil gas burned during every hour. When distilled, however, at a low or black red heat, in larger retorts, as carried on in ordinary paraffin oil works, the coal yields only 3,000 to 3,500 cubic feet of illuminating gas, with the photogenic power of thirty candles for every five cubic feet burned during the hour, so that two-thirds of the total quantity of gas capable of being yielded by the coal is sacrificed; but in place thereof there are obtained about sixty gallons of crude paraffin oil, with a specific gravity of .900 to .905. The gas works in question are virtually crude paraffin oil works, in which the gas is utilised, and as the change in the mode of working the coal appears to be profitable, there is every reason to consider it likely that other gas works will follow the example, and become virtually crude paraffin oil works, with refineries attached thereto.

EQUATORIAL TELESCOPE FOR MELBOURNE.

IN his last year's Address (to the Royal Society) General Sabine mentioned the vote of £5,000 by the Legislature of Victoria for a large equatorial telescope for the Observatory at Melbourne. He now informs us, as in a report of progress, that the work of construction, by Mr. Grubb, of Dublin, is well advanced, and that the instrument will be ready for trial in the spring of 1867. To ensure strength and lightness, the tube is made of lattice-work, formed of tapering steel ribs; and the supports of the speculum are equilibrated systems of steel levers. In the casting of the specula some points of interest appeared, which will be appreciated by astronomers and opticians. The first speculum came out sound from the annealing furnace, but had two blemishes on its surface which would have required a month to grind out, and Mr. Grubb broke it up without hesitation for recasting; though, not many years ago, such a disk would have been almost inestimable. He was rewarded for his pains, for the second casting turned out a speculum of which the surface is faultless. In addition to the pains and thought he has bestowed on this subject, General Sabine, at the request of the Board of Visitors of the Melbourne Observatory, and with the sanction of the committee who have superintended the construction of the telescope, has appointed Mr. Albert Le Sueur to the important post of Observer. This gentleman, who was a wrangler at Cambridge in 1863, is at present studying sidereal astronomy under Prof. Adams, at the Cambridge Observatory; and Mr. De La Rue has kindly promised to instruct him in the practice of celestial photography. So, as Gen. Sabine says, there is reason to hope that this magnificent telescope will be used with full intelligence and zeal, and amply repay the munificent spirit that has guided the Legislature of the energetic and prosperous colony of Victoria.—*Athenæum*.

SALES.

IRON WORKS, CARDIFF'S BRIDGE, CO. DUBLIN.

—In our advertising columns will be found a notice that the above-mentioned valuable premises, with the plant and machinery therein, will be disposed of by public auction on the 27th inst. by Mr. Crooke. The works were carried on for many years by the late Mr. James Tyrrell, and to an enterprising party they would yield a large yearly income, more particularly as the premises are capable of being considerably enlarged so as to be available for the heavier branches of the iron trade. Amongst the machinery there is a powerful fourteen horse-power condensing engine and tubular boiler.

Mr. George Bell, of Sir John Rogerson's quay announces for sale by auction on Tuesday next a cargo of oak, ash, elm, pine, and deals, to which we beg to direct the attention of our friends in the building trade. See *advt*.

Mr. Edward Chloner's next wood sale takes place on Thursday and Friday, and comprises mahogany, walnut, fancy woods, &c. See *advt*.

STEAMERS AND BARGES FOR THE INDUS.

IN May last, one steamer and two barges were shipped from Messrs. Laird Brothers' Birkenhead Ironworks, which had been constructed by that firm for the Scinde Railway Company, for employment on the River Indus; and a second steamer, and two other barges of precisely similar form and dimensions, are now approaching completion, the hulls as well as the machinery having been made by Messrs. Laird.

The steamers are of a total length on deck of 220 ft., and at water-line, 212 ft.; breadth of beam, 28 ft.; depth at side, 8 ft.; and burthen, 816 tons, O.M. They have upright stems and elliptic sterns, and the model has been designed with a view of obtaining a high rate of speed; they will now tow two barges, one on each side abreast of the paddle-boxes, and will also carry cabin passengers, accommodation for whom is provided below. The decks are flush, and from the stern, and as far as the fore end of the forward sponson-house, they are covered by a wooden awning supported by light iron frames, from which hanging canvas curtains extend to the rail; there is also a canvas awning hung at a distance of about 15 in. below the wooden one. These together form a good protection from the heavy rains and excessive heat, at the same time giving a promenade deck more airy than a regular deck-house. The draught of water of these steamers is 3 ft. 6 in., with from 50 to 60 tons weight on board, and the speed in still water, without the barges, about 15 statute miles per hour. For the length of the engine and boiler rooms, and cargo-holds, two longitudinal bulk-heads (dividing this part of the vessel into three compartments) extend at about 8 ft. from the middle line, and are connected at the bottom to the side keels, and above to the longitudinal deck tie-plates; at the fore and aft ends of these spaces they are also kneed against the athwartship bulkheads, thus giving additional strength and rigidity. Besides these, each steamer is divided into ten water-tight compartments by nine athwartship iron bulkheads. One or more of these compartments being filled with water by striking on a rock, or other accident, would not materially affect their buoyancy. The sponson-houses are fitted up as bath-rooms, lavatories, water-closets, &c. The inside of both houses and paddle-boxes are formed of iron-plate, along the top end of which runs a girder-plate, which curves down, and is extended well forward and aft, and secured to the covering-plate and steer-strake of outside plating.

The engines consist of two diagonal oscillating cylinders placed side by side, having a diameter of 48 in. with 4 ft. 6 in. stroke. There are two boilers to each vessel, one being placed before and the other abaft the engine; they are of the ordinary horizontal tubular form, with iron tubes. The paddle-wheels are on the ordinary radial plan.

The barges are of the following dimensions: length on deck, 186 ft.; length at water-line, 180 ft.; beam, 22 ft.; depth at side, 8 ft.; and 429 tons burden. They will carry about 170 to 180 tons of cargo with a draft of water of 3 ft. 6 in., and about 50 tons more on 4 ft. draft. The decks are strongly supported to carry heavy deck cargoes, and the holds are particularly well ventilated, and arranged to carry troops if required. The barges are divided into five water-tight compartments by iron bulk-heads, and have double canvas awnings fitted from end to end with curtains down to rail.

The hulls of the vessels are built of iron of a very superior quality, and the different parts are so arranged as to obtain strength with lightness. Bessemer cast steel is introduced in some parts, viz., centre keel, steer-strake, and covering-plate, the thickness of the steel being kept the same as is usually fitted of iron.

The boats, on completion, are taken to pieces, and sent out in sections for re-erection at Kurra-chee.—*Engineering.*

BELFAST.

THE new street, which is to run from High-street to Rosemary-street, will be 40 feet wide, instead of 35, as at first intended, and arrangements have been made with the Town Improvement Committee to have it immediately formed and paved with square sets. In two months from this time the work, it is expected, will be completed, and Legg's-lane and Caddell's-entry will have ceased to be a disgrace to the principal street in the town. The removal of the old houses is being rapidly pushed forward, and in a few days there will not be a remnant of them observable. A few days since, in the course of a reference to this great improvement at the committee meeting, the question of widening Rosemary-street was discussed at some length. We understand that this was regarded as an undertaking so obviously necessary in this inconveniently narrow street as to call for early attention on the part of the council.

The Town Improvement Committee, at a recent

meeting, considered the plans sent in for the new cemetery, and came to the conclusion that none of them were of sufficient merit to justify a recommendation for adoption by the council. It will be recollected that the council invited plans for laying out the ground which has been obtained for the purpose of a cemetery. Eight or ten plans were sent in for approval, and they passed under the review of the council in committee at a former meeting, but no decision was come to. One of the designs, however, was selected by the committee as entitled to any pre-eminence that could be claimed in this competition, and it is probable that the author will be asked to make an amended plan, embodying suggestions from the committee and the surveyor. The importance of a proper selection will be admitted by all who share in the common desire to see the last resting-place of their friends. "God's Acre," beautified as it should be; and we trust that the committee may succeed in realising the expectations which in this matter they have given rise to. The ground has been purchased, but a further outlay of £10,000 or £12,000 will be involved in its preparation. In the first place, deep and extensive drainage will be requisite, and then will follow the erection of inmortuary chapels, a surrounding wall, with plantings, &c. It is now certain that, within a comparatively short period, Belfast will have a capacious and handsome extra-mural cemetery, but certainly not a day sooner than necessary.—*News-letter.*

L A W.

COURT OF COMMON PLEAS.

Ritchie and Dunlop v. Caldwell.—Action brought by plaintiffs, builders in Ballymacarrett, Co. Down, to recover damages for an alleged breach of a building contract. It appeared that an agreement had been entered into on the 10th of July last between plaintiffs and defendant, whereby plaintiffs agreed to build for defendant five houses in Ballymacarrett, in accordance with certain plans and specifications, for the sum £430 payable by instalments. Plaintiffs stated that they entered upon and proceeded with the work for a considerable time, but that defendant would not permit them to continue the work, and wrongfully discharged them. There were also counts for work and materials and for money paid. Defendant pleaded a traverse to nearly all the allegations in the plaint, and also special pleas stating that the agreement in question contained a clause to the effect that if plaintiffs neglected for the space of three days to continue the work defendant should be at liberty to enter upon it at their expense, retaining in his hands for that purpose any money that might then be due to plaintiffs. Verdict for plaintiffs, with £70 damages, and costs.

Owens v. Power.—Action brought by plaintiff, a builder residing in Store-street, in this city, to recover damages, laid at £800, from defendant, owner of adjoining premises, and carrying on the business of a miller, for having wrongfully erected an engine-house, a steam-engine, and machinery adjoining to, and close upon plaintiff's house, and continuing to work same, and thereby causing divers rattling jarring, and upsetting sounds, noises, and continual vibration, whereby plaintiff and family were seriously inconvenienced, and the value of his premises greatly depreciated. There was also a count for trespass in building upon portion of plaintiff's premises. The defences denied the commission of the acts complained of, or that any injury had resulted to plaintiff therefrom, and averred that, for more than twenty years the same business had been carried on without interruption, and was still worked in the same manner; and, as to the count for trespass, the defendant denied it, and pleaded also leave and licence. Verdict for defendant.

Cardinal Cullen and others v. O'Meara and others.—Action brought by Cardinal Cullen, and the Right Rev. Dr. Leahy, as trustees of the Roman Catholic University, against defendants, three of the directors of the Dublin Trunk Connecting Railway, to recover a sum of £4,384 7s. 8d., the value, with interest thereon, of plaintiffs' interest in certain premises on North Circular-road, as ascertained by the arbitrator. It appeared that in 1862 plaintiffs and the late Rev. Dr. Dixon took a lease from the trustees of Lord Blessington's estate of thirty-four acres of the lands of Clonliffe, near Jones's-road, for a term of 1,000 years, at the yearly rent of £343 13s. 9d., for the purpose of erecting thereon a Roman Catholic University. In 1864 several bills were presented to Parliament for the purpose of connecting the several railways in Dublin; and amongst them was a bill by the Dublin Trunk Connecting Railway Company, which it was proposed should go round Dublin, and so connect the various railway termini. Plaintiffs having ascertained that the company, by their plans, duly lodged pursuant to Act of Parliament, proposed to run their line of railway through

portion of the lands so demised to plaintiffs for the purpose of the University, resolved to oppose the bill. Whereupon the company agreed to purchase plaintiffs' interest in the entire premises, the value to be ascertained by an arbitrator, and plaintiffs agreed, in consideration thereof, not to oppose the bill. Accordingly the bill was passed. Mr. Brasington was appointed arbitrator to value plaintiffs' interest in the premises, and defendants agreed to pay the amount so to be ascertained. Mr. Brasington valued plaintiffs' interest at £4,336 7s. 3d., but defendants did not pay the amount, although it was alleged that a good title had been made out by plaintiffs. Defendants denied there had been any award, denied the agreement, alleged that plaintiffs had not shown a good title, and alleged that, by the agreement payment was not to be made until good title was made out. The question involved was purely legal, and after the case had been opened for some time, a verdict was returned for plaintiffs in the amount claimed, subject to be turned into a verdict for defendants, if the court above should be so of opinion; but if the court should be in favour of plaintiffs, then the value of the premises should be ascertained by Mr. Fishbourne, on principles to be laid down for his guidance by the court.

CONSOLIDATED COURT.

Executors of J. P. Beardwood v. the Dublin Exhibition Palace and Winter Garden Company.—In this case, Mr. Heron, Q.C., on behalf of defendants, moved that the time to plead and the time to answer certain interrogatories served with summons and plaint should be extended for a fortnight from the 3rd of December, without prejudice to such steps as defendants might be advised to take in the mean time for such other order as the court should think right. The action was brought by the executors of J. P. Beardwood, for balance of account for building the Exhibition Palace, and claimed the sum of £13,189 11s. 10d. The plaint contained 28 counts; but he (counsel) did not complain of this, because, in all probability, there could not be less, considering the nature and magnitude of the action. The first three counts of plaint were framed upon the three original contracts between defendants and the late Mr. Beardwood. In the contract deed it was provided that, in case any dispute or difference should arise between the parties in reference to the objects, or the construction, meaning, incidents, or consequences of the contract, or of the drawings enumerated in the specifications, or as to any sum claimed by the contractor, or in anywise relating to the terms of the contract, it should be decided and determined by the architect and the advising architect (Mr. Jones and Mr. Darley), and, if they should disagree by the advising architect alone, provided that the contractor, or his executors or administrators, should not be entitled to maintain any action at law or suit in equity touching any of the matters aforesaid, till the matters in dispute should have been so decided by the architect and advising architect, or by the advising architect alone. It appeared by the indorsement that the accounts to be investigated in the case amounted to over £70,000. The first three counts had reference to the three original contracts between defendant and the late Mr. Beardwood, for construction of the building, and remaining counts, up to the 15th inclusive, appeared to be framed on orders given after the three original contracts had been signed; the question between the parties would be—whether these orders constituted new contracts between the company and Mr. Beardwood in his lifetime, or whether they came within the clause by which the extra works to the original building were to be dealt with in the same way as the original works, and subject to the arbitration of the two gentlemen named.

Baron Hughes—It is very natural that such a question should arise. It appears to me that time must be given in this case.

Mr. Pallett, Q.C., opposed the motion, and stated the action had been taken by direction of Master Litton, given in a suit for the administration of the assets of Mr. Beardwood, and that the only object of plaintiffs was that they should not be prevented from having a trial at the Hilary after-sittings.

Motion granted on condition that defendants should take short notice of trial, so that the case might be tried in the after-sittings of Hilary Term.

THE ATLANTIC TELEGRAPH.—The longest message yet transmitted through the Atlantic Telegraph was a despatch from the United States' Government at Washington to the American Minister at Paris. It was sent through in the early part of last week, and consisted of more than 4,000 words. It occupied ten hours in transmission, and was sent at the average rate of seven words per minute. The cost of the message was over £2,000. The message, if printed, would occupy about three columns of a daily papers.

Learned Societies' Meetings.

THE ROYAL IRISH ACADEMY.

A GENERAL meeting of the Academy was held at their house, 19 Dawson-street, on Monday evening. The chair was occupied by Lord TALBOR de MALAHIDE.

His lordship referred in terms of deep regret to the loss sustained to the Academy in consequence of the death of the Rev. Edward Hincks, D.D., who had contributed to the "Transactions" of this body many valuable and interesting papers on the Assyrian and Egyptian antiquities.

Mr. John O'Hagan, Q.C., signed the roll and was formally admitted a member of the Academy.

The Rev. Dr. Reeves, secretary, read a paper on the following subject, by G. H. Kinahan, Esq., "Notes on a Crannoge in Lough Naneevin, in the county of Galway."

The secretary also read a paper by G. H. Kinahan, Esq., entitled "Notes on some of the ancient villages in the Arrian Isles, county Galway."

The papers were referred to council for publication.

The secretary read a letter from Miss Eliza A. Morrison, niece of the late Mr. William H. Morrison, architect, presenting the bust of that gentleman to the Academy. He also read a letter from Mr. T. H. Todhunter, executor of the late Professor W. H. Harvie, presenting a memoir, in two volumes, by Dr. A. Gray, of Massachusetts, describing "American Exploring Expeditions." A volume of "The Closing Years of Dean Swift's Life," by Sir Wm. Wilde, was presented by the author. The thanks of the Academy were passed to the respective donors.

The President—Gentlemen, since our last meeting a deputation from the Academy waited upon the Lord Lieutenant, on the subject of increased grants. The memorial stated that we considered we were entitled under the resolution of a Select Committee of the House of Commons to a grant of £800. They had originally reported that £1,000 would place us in an efficient state. Of this £200 was voted during the last session, and has been applied to the payment of Irish scribes. The remainder of the thousand pounds was distributed into four sums, one for the scientific branch for the promotion of meteorological investigation; another for the maintenance of the library and a proper assistant; another for adding to the staff of the museum; and a fourth for the support of our publications, for the purpose of enabling us to publish our Transactions with more efficiency and punctuality. These were the grounds upon which we went to his Excellency, and I am happy to state that, although we could not receive a decided answer, his Excellency expressed his opinion that we had very strong grounds, and that he would use his best exertions to carry our wishes into effect—that he would use all his influence with the Government to get a favourable answer to our memorial.

THE ROYAL GEOLOGICAL SOCIETY OF IRELAND.

A MEETING of this society was held on Wednesday evening, in the Museum Buildings, Trinity College. The Rev. Professor Haughton, F.T.C.D., read a paper, by the Rev. W. Robinson, of Cambridge, "On the Theory of Hansen to account for the peculiarities of the Moon's Rotation, applied to the explanation of some problems in Terrestrial Geology." Mr. R. H. Scott, M.A., read a paper, entitled "Notes of a Visit to the Granitic District of Strontian, Argyshire." After the reading of the papers, the Rev. Professor Haughton exhibited a human skull found in sinking the south shaft of the Liffey Tunnel.

IRISH BUILDING NEWS.

ESTABLISHED CHURCH.

St. Peter's church, Drogheda, was re-opened on Sunday last, after alterations and improvements, including new seating, and the cleansing and decoration of the interior. The fine organ has been renovated.

The New Church at Kenure, Lusk, Co. Dublin, consists of a nave 48 feet by 20 feet, a chancel 19 feet by 13 feet, a vestry, and south porch. The style is 13th century Gothic, the carvings and decorations bearing somewhat of a French character. The external walls are faced with Skerries limestone, the dressings of doors and windows being of Portland stone. The grey colour of the limestone is relieved at intervals by bands of Cumberland red sandstone. Internally the walls are lined with white Suffolk and red bricks. The inner member of the chancel arch is of Portland stone, supported by richly-carved corbels. The west wall of the church rises above the roof, and terminates in a picturesque bell-cote surmounted by an ornamental stone cross. The east and west windows are filled with stained glass.

The pulpit is of Caen stone, handsomely carved and lined with blue velvet; it is placed at the north side of the church, outside the chancel. Mr. James Edward Rogers was the architect; Messrs. Gilbert Cockburn, and Sons, contractors. The cost was about £1,200.

MISCELLANEOUS.

THE CONCLUSION OF THE AUTUMN PLOUGHING MATCH SEASON.—The season for these matches is now virtually over, as only one or two more at the most will be held before the end of the year. The last match of which notice has been received was that held at Goxhill, Lincolnshire, on the 28th ult., when a spirited contest took place, the palm being carried off by James Barker, Messrs. Ransome's well-known ploughman; thus increasing the position of that firm by winning their thirty-third prize this season. Messrs. Ransomes have competed at thirty-six matches this autumn, of which number twenty-seven have been won by their own men and two by local men using their ploughs. These, with four matches (at which Messrs. Ransomes did not compete) won by district ploughmen, make up the thirty-three prizes above mentioned.—*Standard*, Dec. 3.

An enormous steam-engine, which has been made at Indret for the Universal Exhibition, has been shipped at St. Nazaire on board two government vessels, which are to take it to Havre. Thence it will be brought to Paris by the Seine. This engine, nominally of 960 horse-power, but really of about 4,000, is intended to work several large pumps. It will be placed in position by means of an immense crane now being erected in front of the Champ de Mars.

ROYAL DUBLIN SOCIETY.—The second evening scientific meeting for the session 1866-7 will be held on Monday evening next. Dr. J. Emerson Reynolds—"Observations on certain Absorption Spectra": illustrated on the screen by the lime light. Dr. Reynolds will also exhibit the new French *Papier Photographique*, possessing some novel and valuable photographic properties.

THE CRUMLIN VIADUCT.—A few months ago this viaduct, which is one of the greatest triumphs of engineering science, was reported to be in an insecure condition, and Captain Tyler inspected it on behalf of the Board of Trade, and found that the principal defects consisted in the wearing of the pins, and a general loosening of the entire structure, due to the vibration of passing trains. As a result of his inspection certain alterations, previously contemplated, have been carried out by Mr. W. G. Owen, the Great Western Company's engineer. These were in some respects rendered necessary by the fact that the timber flooring, on which the lateral stiffness of the bridge greatly depended, was rapidly decaying, and also in some measure to the increased weight of the trains traversing the bridge. The whole of the timber flooring, 6 inches thick, has been removed, and for it has been substituted wrought iron transverse girders, 12 inches deep by 27 feet long, spaced 8 feet apart, with rail girders of the same depth placed between them, and light longitudinal lattice girders connect the ends. The flooring is made of wrought-iron plates, riveted together. This change had materially added to the lateral stiffness of the bridge, and placed it beyond the reach of danger from fire. The distribution of the weight has been altered by removing the permanent way further from the outer girders towards the centre, and the result is that the momentum of the weight of a passing train is reduced as regards the outer girder, and is increased as regards the inner girder, which had not previously borne its fair share of the load. Owing to this change, and to the strengthening of the roadway, it is now considered by the engineers of the line that the viaduct is as safe with a ton and a half per foot as it was before the alterations with a load of one ton per foot, for which it was calculated, the greater strain being still within the limits prescribed by the Board of Trade. Some of the three-inch bolts were found to be considerably worn, and this defect has been remedied by the introduction of gusset plates riveted to the diagonals and the booms, by which oscillation is prevented and a good deal of strain taken off the bolts. The effect of the alterations has been to reduce the deflection of the girders from one inch and a half with the ordinary heavy trains to five-eighths of an inch. Nearly 1,000 tons of iron have been added to the bridge by the improvements.

The great tunnel excavated under Lake Michigan, for supplying Chicago with water, has been completed. It is nearly two miles long; is dug eighty feet under the bed of the lake, beneath a stratum of clay; and was excavated without a single accident; the ground being first broken on March 17, 1864. Its capacity is 57,000,000 gallons of water daily. The cost of the excavation was about £46,000.

OVERLOADING OF LOFTS.—On Tuesday evening, three lofts in a store belonging to Mr. Wallace, Merchant's-quay, Newry, fell with a tremendous crash. The upper loft, which was heavily laden with Indian corn, in its descent carried with it the other two, one of which supported corn of the same description, and the third contained grass-seed. The front door, owing to the excessive weight of the accumulated materials, was forced open, and the street for a considerable distance was strewn with the contents of the lofts. Mr. Wallace and a clerk were in the office at the time, but fortunately succeeded in escaping unhurt. It would appear that the flooring and beams are perfectly sound, and therefore the occurrence must be attributed to overloading.

PRIZE CUP FOR SWEDEN TURNIPS.—We (*Farmers' Gazette*) understand that the very handsome prize of a cup value £50, or a purse containing fifty sovereigns, offered by John Wight, Esq., 29 Eustace-street, for the best ten acres of Sweden turnips grown upon Prentice's superphosphate, has been awarded to R. S. Doyné, Esq., of Wells, Gorey, county Wexford, whose crop weighed 63½ tons per Irish acre. There was close competition between this crop and that of 110 Irish acres, grown in one field by Allan Pollok, Esq., Lismany. The cultivation of which the judges express their highest commendation. They regret that they had not at their disposal a special prize of equal value to give to Mr. Pollok.

INDUSTRIAL MUSEUM OF IRELAND.—A course of lectures on Geology, and its application to the arts, was commenced on Tuesday by J. B. Jukes, M.A., F.R.S.; and on Wednesday a course on Natural Philosophy, by William Barker, M.D., M.R.I.A.

THE HEALTH OF DUBLIN.—In the Dublin Registration District (which extends over an area of 9,745 statute acres, and had, by the census of 1861, a population of 314,000), the births registered during the week ending December 8th, amounted to 164—88 boys and 76 girls. The number in the corresponding week of last year was 125. The deaths registered during the week were 175—92 males and 83 females. In the corresponding week of last year the number was 164. The number of deaths from cholera was 31, the number in previous week being 65. Of the deaths from cholera, 25 occurred within the Municipal Boundary, 4 at Rathmines and 2 at Donnybrook; there was not a death from cholera registered in Kingstown or Blackrock during the week. Diarrhoea was the cause of 9, and fever 7 deaths. 3 deaths were caused by scarlatina and 3 by diphtheria. 10 children died in convulsions. 12 deaths were the effect of bronchitis and 24 of phthisis or pulmonary consumption. There were 4 accidental deaths. At the Observatory of the Ordnance Survey Office, Phoenix Park, the mean height of the barometer during the week was 29.664 inches. The highest daily mean reading (30.039) occurred on Saturday, and the lowest (29.325) on Friday. The mean temperature during the week was 48.8° (in the corresponding week of 1865 it was 45.9°); the lowest daily mean (38.7°) occurred on Friday, and the highest (50.9°) on Monday. The temperature was highest on Tuesday, when the thermometer registered 57.1°, and was lowest on Saturday, the mercury having fallen to 30.0°. The mean of the dry bulb for the week was 54.0°; and of the wet bulb 42.7°. The mean humidity of the air was .843—complete saturation being represented by 1.0. The rain-fall during the week measured .777 of an inch.

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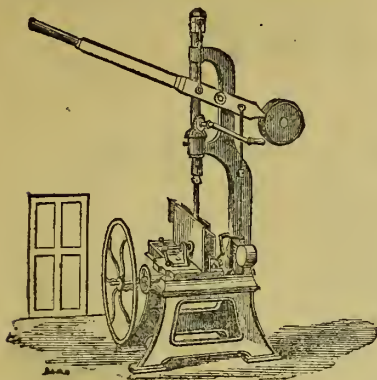
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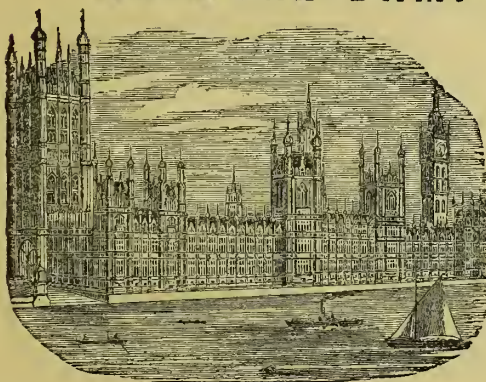
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House of Commons, 2nd March, 1864.

DEAR SIR,—In reply to your note, I beg to say that I have
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that of Messrs Francis & Son; I mean the Cement usually
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either of your firms, to be equally good. I know no difference,
chemically or practically, between them; and I should
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other. You are at liberty to use this note, if you think it ne-
cessary.—I am, Dear Sir, your obedient servant,
Messrs. White & Son. (Signed) **WILLIAM TITE.**

From **R.O. MINNIE, Esq., Surveyor to Board of Ordnance, London.**
War Office, Pall Mall, London, S.W.,
3rd March, 1864.

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(Signed) **R. O. MINNIE, Surveyor.**

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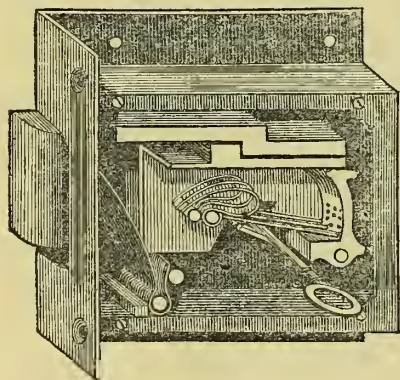
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The Engineer of 28th September, 1866.*The Builder* of 29th September, 1866.*The City Press* of 10th November, 1866.*The Mechanic's Magazine* of 28th September, 1866.*The Building News* of 5th October, 1866.*The Ironmonger* of 29th September, 1866.*The Artizan* of 1st November, 1866.*The Builder's Weekly Reporter* of 8th Oct., 1866.*Engineering* of 28th September, 1866.

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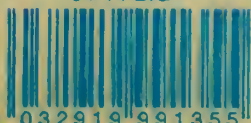
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